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FINAL REPORT

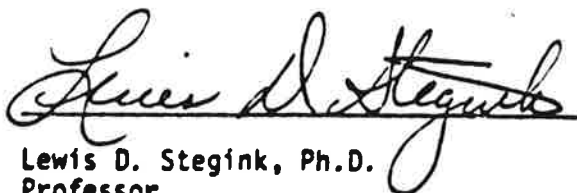
EFFECT OF ASPARTAME LOADING AT 100 MG PER KG BODY WEIGHT UPON PLASMA AND
ERYTHROCYTE LEVELS OF FREE AMINO ACIDS IN NORMAL SUBJECTS AND SUBJECTS
PRESUMED TO BE HETEROZYGOUS FOR PHEHYLKETONURIA

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Introduction

Aspartame is a dipeptide (L-aspartyl-L-phenylalanyl-L-methyl ester) which has a sweetening power 180 to 200 times that of sucrose. It is hydrolyzed in the intestinal mucosa to its component amino acids, which are handled in a manner similar to those arising from dietary protein. Questions about Aspartame safety have arisen because of concern about the potential toxic effects of its constituent amino acids, aspartate and phenylalanine. Like all chemical substances, these amino acids may exert toxic effects at very high dose levels, although species and age susceptibility vary greatly. It is clear, however, that toxic reactions to these amino acids occur only under conditions where blood levels of aspartate and phenylalanine are grossly elevated.

It is difficult to test for many potentially toxic effects of aspartate and phenylalanine in man. Thus, it is important to examine the effect of large doses of Aspartame upon plasma amino acid levels, to determine if such doses result in plasma levels of those amino acids associated with toxic findings in animals. Such studies should be carried out in both a normal population and in populations genetically at potential risk from Aspartame ingestion.

We have previously studied the effect of Aspartame administration at doses ranging from 34 to 200 mg/kg body weight upon plasma and erythrocyte levels of free amino acids in normal adult subjects. These studies have been reported to Searle in detail earlier (1) and have been published in part (2-5). In these studies, plasma and erythrocyte aspartate levels were essentially unchanged after Aspartame administration. Phenylalanine levels showed the expected dose-response with increasing Aspartame load.

Having examined the question in presumably normal individuals, the next

to Aspartame ingestion in individuals having a decreased metabolic capacity to handle aspartate and phenylalanine would be an appropriate step.

To our knowledge, no individuals with specific defects in aspartate metabolism are known to have survived fetal life. A major defect in aspartate metabolism may not be compatible with life. This is not surprising in view of the aspartate's importance in cellular function (see review 6).

However, a population group which metabolizes phenylalanine poorly is known. These individuals are homozygous for the condition known as phenylketonuria. Individuals affected with this disease fail to metabolize phenylalanine effectively. This results in abnormally elevated plasma and erythrocyte phenylalanine levels. In addition, phenylalanine related metabolites such as phenylpyruvate, phenyllactate or o-hydroxyphenylacetate accumulate in the blood, spinal fluid and urine of these patients (7).

Children homozygous for classical phenylketonuria are mentally retarded, and have plasma phenylalanine levels ranging from 120-600 umoles/dl (20-100 mg%) continuously. The exact cause(s) of the mental retardation in these children is not clear, but may result from the effects of phenylalanine metabolites, such as phenylpyruvate on metabolism (8, 9), as well as the elevated blood phenylalanine levels (7).

A number of children have been identified whose phenylalanine levels range from 10-20 mg% and who are not mentally retarded. These are often referred to as hyperphenylalanemic variants. Although some investigators feel that there is no benign persistent hyperphenylalaninemia, and recommend dietary therapy for any patient with phenylalanine levels between 10-20 mg% continuously (10-12 umoles/dl), most investigators do not treat patients with plasma levels below 10 mg% if excess phenylalanine is not detected in the urine (13, 14).

The incidence of the heterozygous state of phenylketonuria is estimated at about one person in fifty to one person in seventy. It is likely that such heterozygous subjects would ingest Aspartame when it reaches the market. This raises two important questions: First, do such heterozygous subjects metabolize Aspartame in a normal manner? Secondly, if a slower metabolism of Aspartame is noted, would the levels of phenylalanine produced be detrimental to the subject, or to a fetus in utero if the individual were pregnant?

We have previously compared the effect of Aspartame administration at 34 mg/kg body weight upon plasma and erythrocyte levels of amino acids with time in 8 subjects presumed to be heterozygous for phenylketonuria and 12 normal subjects. This level of Aspartame ingestion approximates the 99.9th percentile projected of expected daily ingestion. Plasma or erythrocyte aspartate levels were not affected by Aspartame loading in either group, indicating rapid metabolism of the aspartate administered. However, plasma phenylalanine levels did differ significantly between groups. In normal subjects, mean (\pm S.D.) plasma phenylalanine levels increased from fasting levels of 5.6 ± 1.21 umoles/dl to values in the normal postprandial range (11.1 ± 2.49 umoles/dl), and essentially returned to baseline by 8 hours. In the heterozygous subjects, mean plasma phenylalanine levels were higher (16.0 ± 2.25 umoles/dl), and the plasma concentration-time curve broader than in normal subjects. However, maximum phenylalanine levels were only slightly above values noted postprandially in the human infant. The data indicate slightly slower, but adequate metabolism of the phenylalanine portion of Aspartame by the heterozygous subject. These data have been submitted to Searle (13), and have been published in abstract form (14). The present study expands that study by evaluating a potential abuse dose of Aspartame (100 mg/kg body weight) upon plasma and erythrocyte levels of amino acids.

Materials and Methods

Six apparently normal healthy adult subjects (3 male, 3 female) and 5 female subjects presumed to be heterozygous for phenylketonuria were studied. The phenylketonuric heterozygotes had all born at least one child (usually two children) with classical phenylketonuria. The proposed study was fully explained to each subject and informed, written consent was obtained. The protocol of the study was reviewed and approved by the Committee on Research Involving Human Subjects of the University of Iowa. The subjects were screened within one week prior to entry to the study. This included a physical examination, complete blood count, urinalysis, a pregnancy test (female subjects), SMA 6/60 and SMA 12 tests (serum: total protein, albumin, calcium, inorganic phosphate, cholesterol, glucose, urea nitrogen, uric acid, alkaline phosphatase, lactate dehydrogenase, total bilirubin, glutamate-oxaloacetate transaminase, sodium, potassium, chloride, carbon dioxide and creatinine) and fasting plasma amino acid analyses. All subjects were required to refrain from the ingestion of alcohol 24 hours prior to and 24 hours after administration of the test compounds.

Aspartame (provided by Searle Laboratories, Skokie, Ill.) was administered at 100 mg/kg body weight dissolved in 500 ml of cold orange juice and administered to fasting subjects at 0800 hours. Plasma and erythrocyte amino acid levels were measured at 0, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 5, 6, 7 and 8 hours after the test load. The subjects received nothing by mouth for 8 hours following the Aspartame load, except for 240 ml of water at 1200 and 1400 hours.

Blood samples for amino acid analysis were centrifuged immediately to separate plasma and erythrocytes. The plasma was deproteinized with sulfosalicylic acid (2, 15) and either analyzed immediately or stored at -70° to prevent loss of glutamine and cystine (16, 17). Erythrocytes were prepared according to the method of Levy and Barkin (18). Amino acid analyses were carried out on an automatic amino acid analyzer (Beckman 121B).

Statistical analyses consisted of analysis of variance and Duncan's multiple range test.

This report combines data from two different studies with Aspartame. The studies in the 6 normal adult subjects were carried out earlier, and have been previously reported to Searle (1), and published in abstract form in the literature (5). The data in this report compares those earlier data with data obtained from the study of 5 subjects heterozygous for phenylketonuria given Aspartame.

Results

The detailed plasma and erythrocyte amino acid analyses in subjects studied are found in Table I and II. Table I lists plasma and erythrocyte levels of amino acids in the 6 normal subjects. Table II lists plasma and erythrocyte levels of free amino acids in the 5 subjects presumed to be heterozygous for phenylketonuria. A brief summary of these data follows:

Effect Upon Plasma Amino Acid Levels: As shown in Tables I & II, plasma aspartate levels were not significantly affected by Aspartame administration in either normal subjects or subjects presumed to be heterozygous for phenylketonuria. Similarly, levels of those amino acids readily derived from aspartate, such as glutamate, asparagine, and glutamine, were also essentially unchanged after Aspartame loading in both groups.

Plasma levels of alanine and proline increased significantly over zero time levels after Aspartame load in both normal subjects and heterozygous subjects. However, a similar response in plasma alanine and proline levels was noted in subjects receiving lactose in orange juice (4). Thus, this response is likely not due to Aspartame, but rather due to the orange juice vehicle or the stress of blood sampling (19).

Plasma phenylalanine levels increased significantly after Aspartame loading in both normal subjects and subjects heterozygous for phenylketonuria. As shown in Figure 1, plasma phenylalanine levels in the heterozygous subjects were higher and the plasma concentration-time curve broader than that noted in normal subjects. This was expected in view of the decreased levels of phenylalanine hydroxylase present in the liver of heterozygous subjects. The mean maximal phenylalanine levels noted in the normal subjects approximated 20 ± 6 umoles/dl at 30-90 minutes after Aspartame loading, while mean phenylalanine levels in the PKU heterozygous subjects were approximately twice as large, ranging from 35.5 ± 7.6 umoles/dl at 30 minutes to 41.7 ± 2.4 umoles/dl at 90 minutes. The plasma phenylalanine levels in heterozygous subjects ingesting Aspartame at 100 mg/kg body weight were similar to those noted in normal subjects ingesting Aspartame at twice that level (Figure 2). Plasma tyrosine levels increased after Aspartame loading in both groups, with higher levels noted in the normal subjects (Figure 1). This was expected since the heterozygous subjects have a decreased ability to convert ingested phenylalanine to tyrosine. The levels of other plasma amino acids were similar in both normal and heterozygous subjects after Aspartame ingestion. Plasma valine, leucine, and isoleucine values decreased after Aspartame administration in both groups. This may reflect the carbohydrate content of the orange juice vehicle (20).

Erythrocyte Amino Acid Levels: It has been suggested that certain amino acids are transported in the erythrocyte to a greater extent than in plasma under some circumstances (21-23). Thus, erythrocyte free amino acid levels were all measured. As shown in Tables I and II, erythrocyte levels of aspartate were unchanged after Aspartame administration in both normal subjects and PKU heterozygotes. Similarly, levels of glutamate, glutamine and asparagine, amino acids readily derived metabolically from aspartate, were unchanged after Aspartame administration.

Erythrocyte phenylalanine and tyrosine levels increased significantly over baseline levels after Aspartame loading in both normal subjects and the PKU heterozygotes. This was expected in view of the increased plasma levels of these amino acids. Erythrocyte tyrosine levels were lower in the heterozygous subjects than in the normal control subjects. Erythrocyte levels of proline and alanine also increased with time after Aspartame loading in both groups. This increase was also expected since plasma levels of these amino acids increased. Similarly, levels of the branched chain amino acids (valine, leucine and isoleucine) decreased slightly, following levels noted in the plasma.

Discussion

As summarized in Table III, the load of Aspartame given is considerable. A typical 70 kg man may be considered to have an energy requirement of about 2500 kcal per day. Approximately 17% of those calories are ingested as sucrose (24). Thus, sucrose ingestion per day is about 1.5 gm/kg. This is equivalent to 7.5 to 8.5 mg/kg Aspartame, considering its range of sweetening power to be 180 to 200 times that of sucrose.

If the total carbohydrate intake of our subjects is assumed to be as high as 50% of total energy, about 313 gm of carbohydrate will be ingested. If all of this carbohydrate is ingested as sucrose, the subject would ingest 4.47 gm/kg over the entire day. If the sweetening equivalent of this amount of sucrose were ingested as Aspartame, the subject would ingest between 23 and 25 mg/kg Aspartame over the course of the entire day. In the present study, Aspartame was administered at 100 mg/kg in a single dose.

The dose studied represents an abuse dose of Aspartame. Such a dose is equivalent to: a) ingestion of 10 liters of Aspartame flavored beverage in a single dose; b) three times the total daily ingestion of Aspartame in a single dose.

the 99.9th percentile of total daily ingestion; c) 4 times the estimated total daily intake if sucrose were the only dietary carbohydrate ingested, and Aspartame totally replaces sucrose sweetness; or d) 10 to 12 times the amount of Aspartame which would be ingested if Aspartame totally replaced usual sucrose sweetness in the diet. The affect of this load was further accentuated by giving it as a single bolus, rather than spacing the load out over the entire day.

Aspartate: There is no doubt that the dicarboxylic amino acids (glutamate and aspartate) will produce neuronal necrosis in the infant mouse when given in large doses (25-27). The ability of the dicarboxylic amino acids to produce neuronal necrosis in the neonatal primate is highly controversial. Although Olney and his colleagues have reported neuronal necrosis after glutamate administration to the neonatal primate (28,29), other investigators have been unable to produce the lesion in the neonatal primate with glutamate (30-35). Reynolds et al (36) have reported the absence of hypothalamic neuronal necrosis in infant monkeys given large doses of Aspartame, or monosodium glutamate (1 gm/kg body weight) with Aspartame (2 gm/kg body weight). The failure of other research groups to detect lesions is not due to failure to elevate plasma dicarboxylic amino acid levels, since large elevations in blood glutamate and aspartate levels were noted in the animals studied (31).

Since the toxicity of dicarboxylic amino acids in the primate is controversial, we have determined the plasma levels of these amino acids required to produce hypothalamic lesions in the most sensitive animal species, the infant mouse. We have shown (37) that plasma glutamate plus aspartate levels must reach 60 to 70 μ moles/dl before the first signs of neuronal necrosis are noted in the infant mouse. Thus, even the acutely sensitive mouse tolerates plasma levels of these amino acids up to 5 times normal. By contrast, plasma glutamate plus aspartate levels up to 500 μ moles/dl did not result in neuronal necrosis in the infant primate (37).

Plasma and erythrocyte aspartate levels are unchanged after administration of 100 mg/kg Aspartame in normal subjects, and those heterozygous for phenylketonuria. These data indicate a rapid metabolism of the aspartate present in Aspartame. Since plasma aspartate levels were not elevated, it is unlikely that even the abuse dose of Aspartame studied poses any risk to normal subjects or those heterozygous for phenylketonuria.

Phenylalanine: A genetic disorder called phenylketonuria results from either the absence of, or the presence of inactive enzyme(s) required for the conversion of phenylalanine to tyrosine. Other children have a decreased ability to metabolize phenylalanine because of decreased quantities of a transaminase enzyme. In children with "classical phenylketonuria", plasma levels of phenylalanine exceed 120 to 160 μ moles/dl (20-30 mg%) and range from 20 to 100 mg% (10-12). These levels, if sustained, are associated with mental retardation. Lower phenylalanine levels (30-60 μ moles/dl, or 5-10 mg%) noted in variant forms of hyperphenylalanemia are not associated with mental retardation (10-12).

Plasma phenylalanine levels peaked at 20 μ moles/dl in normal subjects and at 42 μ moles/dl in subjects presumed to be heterozygous for phenylketonuria after ingestion of Aspartame at 100 mg/kg. A comparison of the phenylalanine levels noted at this large dose of Aspartame with those noted in various clinical situations is shown in Table IV. Normal fasting levels are about 6 μ moles/dl, with postprandial levels reaching about 12 μ moles/dl in normal infants. In children with classical phenylketonuria, phenylalanine levels vary between 120 to 600 μ moles/dl. A number of children have been identified whose phenylalanine levels range from 60 to 120 μ moles/dl, some of whom are mentally retarded. Children with "benign" hyperphenylalanemia have plasma phenylalanine levels ranging from 24 to 60 μ moles/dl (4-12 mg%) consistently within the normal range.

In the present study, phenylalanine levels in the heterozygous subjects reached a mean peak of 42 umoles/dl, with one subject reaching levels of 45 umoles/dl, and declined rapidly. These levels are also below those which would be expected to cause any toxic effect upon such short term elevation of blood levels. Short term elevations of plasma phenylalanine occur in normal subjects and phenylketonuric heterozygotes tested for the incidence of the heterozygous condition (38-43) by loading with 100 mg/kg phenylalanine/kg body weight. Such individuals have short term elevations of their plasma phenylalanine levels similar to the levels noted above, as summarized below from the data of Tocci & Beber (39):

Time	0	1 hr	2hr	4 hr
Phenylalanine μmoles/dl	8.4 ± 4.8	78 ± 48	61 ± 53	34 ± 22

No ill effects have been reported from such short term elevations of plasma phenylalanine levels in either normal subjects or heterozygous individuals. Thus, even abuse doses of Aspartame taken in a single dose are unlikely to have serious effects in either normal subjects or those heterozygous for phenylketonuria.

Relationship of the present study to other data: We have measured plasma and red cell phenylalanine levels with time in normal adult volunteers administered Aspartame dissolved in orange juice at 34, 50, 100, 150 and 200 mg/kg body weight, in an attempt to determine whether potentially toxic phenylalanine levels would be obtained at acute or chronic abuse levels.

A dose-related response of plasma phenylalanine levels to increasing levels of Aspartame was noted (Table V). In the absence of Aspartame, phenylalanine levels did not increase in the time period studied. At 34 mg/kg body weight,

phenylalanine levels approached the levels noted in infants (44, 45) after a meal (12 ± 3 umoles/dl). At higher dose levels, Aspartame loads produced higher and broader curves.

At the highest dose studied (200 mg/kg), mean plasma phenylalanine levels in normal subjects were about 49 umoles/dl (8 mg%). Although this is a considerable phenylalanine concentration, this level is well within the range permitted in phenylketonuric subjects during diet therapy (10-12).

Our data indicate that the subjects heterozygous for phenylketonuria metabolize Aspartame approximately one-half as well as the normal subjects.

As shown in Table V peak plasma phenylalanine levels in heterozygous subjects approximate those expected in normal subjects given a dose twice as large. Thus, the plasma phenylalanine concentration-curve for heterozygous subjects given Aspartame at 100 mg/kg is similar to that of normal subjects ingesting Aspartame at 200 mg/kg (Figure 2). However, even at an abuse dose of 100 mg/kg body weight, plasma phenylalanine levels did not exceed 45 umoles/dl (7.5 mg%) in heterozygous subjects. Although this is a considerable level of phenylalanine, this level is well within the range permitted in phenylketonuric subjects during diet therapy (10-12).

Maternal Phenylketonuria: The second question to be addressed is whether the slower metabolism of Aspartame by the phenylketonuric heterozygote could lead to maternal phenylalanine levels which would be detrimental to the fetus after an abuse dose of Aspartame. In children with classical phenylketonuria, elevated phenylalanine levels are associated with mental retardation. In such children phenylalanine levels vary between 20-100 mg%, or 120-600 umoles/dl. However, a number of children have been identified whose phenylalanine levels range from 10-20 mg%, or 60-120 umoles/dl and are not mentally retarded.

The exact cause(s) of the mental retardation in children with PKU is not clear, but may result from the effects of phenylalanine metabolites such as phenylpyruvate on metabolism (8, 9), as well as high phenylalanine levels.

Although some investigators feel that there is no benign persistent hyperphenylalaninemia and recommend dietary therapy for any patient with phenylalanine levels ranging from 10-20 mg% (60-120 umoles/dl), most investigators do not treat patients with phenylalanine levels below 10 mg% (60 umoles/dl) if excess phenylalanine metabolites are present (10-12).

In the pregnant female homozygous for PKU, the large elevations in maternal phenylalanine levels are amplified by the placenta, concentrating the levels on the fetal side. The placenta maintains a gradient of most amino acids of about 2:1 toward the fetal circulation. Thus, maternal phenylalanine levels of 120 umoles/dl (20 mg%) will result in fetal levels of 240-300 umoles/dl (40-50 mg%). In view of these findings, it is not surprising that heterozygous children born to such homozygous mothers are mentally retarded. Pueschel et al. (46) recently reviewed the world literature, and reported that the majority of the offspring born to homozygous mothers covered in the survey were mentally retarded and had congenital anomalies.

Data such as this, have led investigators to attempt to modify the phenylalanine content of the maternal diet in pregnant phenylketonuric homozygotes during at least part of the antenatal period. Nine attempts to control maternal phenylalanine intake have been reported in the literature (47-55). Four mothers were treated with apparent success, giving birth to normal children (47-50). In at least two cases, the children are still normal at the present time (personal communication from the original investigators to Pueschel et al. (46)). The other case was not listed by Pueschel et al. in their review, and no further information is available. Not all attempts to modify the maternal diet have resulted in normal children (51-55). In some cases the dietary therapy was not continued

and abandoned. In other cases, good dietary control was not obtained. In the 3 successful cases for which good data are available, maternal plasma phenylalanine levels were kept within a range of 12 to 48 umoles/dl (2-8 mg%) continually during the pregnancy period. In the cases which were not successful, maternal plasma phenylalanine levels were in the range of 84 to 120 umoles/dl (14-20 mg%). These data have led to the suggestion that mental retardation may be prevented by maintaining maternal phenylalanine levels between 18 to 48 umoles/dl (3-8 mg%) during the pregnancy. This suggestion is in line with recent studies indicating that phenylketonuric children treated with diets maintaining plasma phenylalanine levels between 30 to 60 umoles/dl (4 - 9.9 mg%) were not significantly different from children in whom phenylalanine levels were maintained between 6-24 umoles/dl (1-4 mg%). These data suggest that long-term plasma phenylalanine levels below 60 umoles/dl (10 mg%) are not detrimental under most circumstances (10-12).

These data can be applied to our present knowledge of Aspartame. Under acute abuse loads of 100 mg/kg, mean peak plasma phenylalanine levels are 7 mg% (42 umoles/dl) and ranged from 5.7-7.5 mg% or 33 to 45 umoles/dl over the course of a few hours. Since the developing infant appears to tolerate continued exposure to phenylalanine levels in this range, it would appear that little danger, if any, is involved even upon acute abuse ingestion of Aspartame (100 mg/kg) with its relatively short exposure time.

Detection of Individuals Heterozygous For Phenylketonuria: Both

Aspartame and phenylalanine loading appear to differentiate the heterozygous condition of phenylketonuria. Such studies are usually carried out after phenylalanine loading (100 mg/kg), with measurement of plasma phenylalanine and tyrosine levels. The data in Figure 3 show plasma phenylalanine levels in the normal and heterozygous subjects given Aspartame at 34 mg/kg. These data indicate a significant difference in plasma phenylalanine levels, 90 to 120 minutes after Aspartame loading, between normal and heterozygous subjects. Similar data were observed at Aspartame doses of 100 mg/kg body weight (Figure 1).

Summary

Plasma and erythrocyte aspartate levels were not affected by Aspartame ingestion at 100 mg/kg body weight in either study group. Plasma and erythrocyte phenylalanine levels are significantly higher in the heterozygous subjects than in normal subjects after Aspartame loading.

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FIGURE 1: MEAN (+ S.D.) PLASMA PHENYLALANINE AND TYROSINE LEVELS IN 6 NORMAL ADULT SUBJECTS (●—●) AND 5 FEMALE SUBJECTS HETEROZYGOUS FOR PHENYLKETONURIA (○---○) AFTER ASPARTAME LOADING AT 100 MG PER KG BODY WEIGHT.

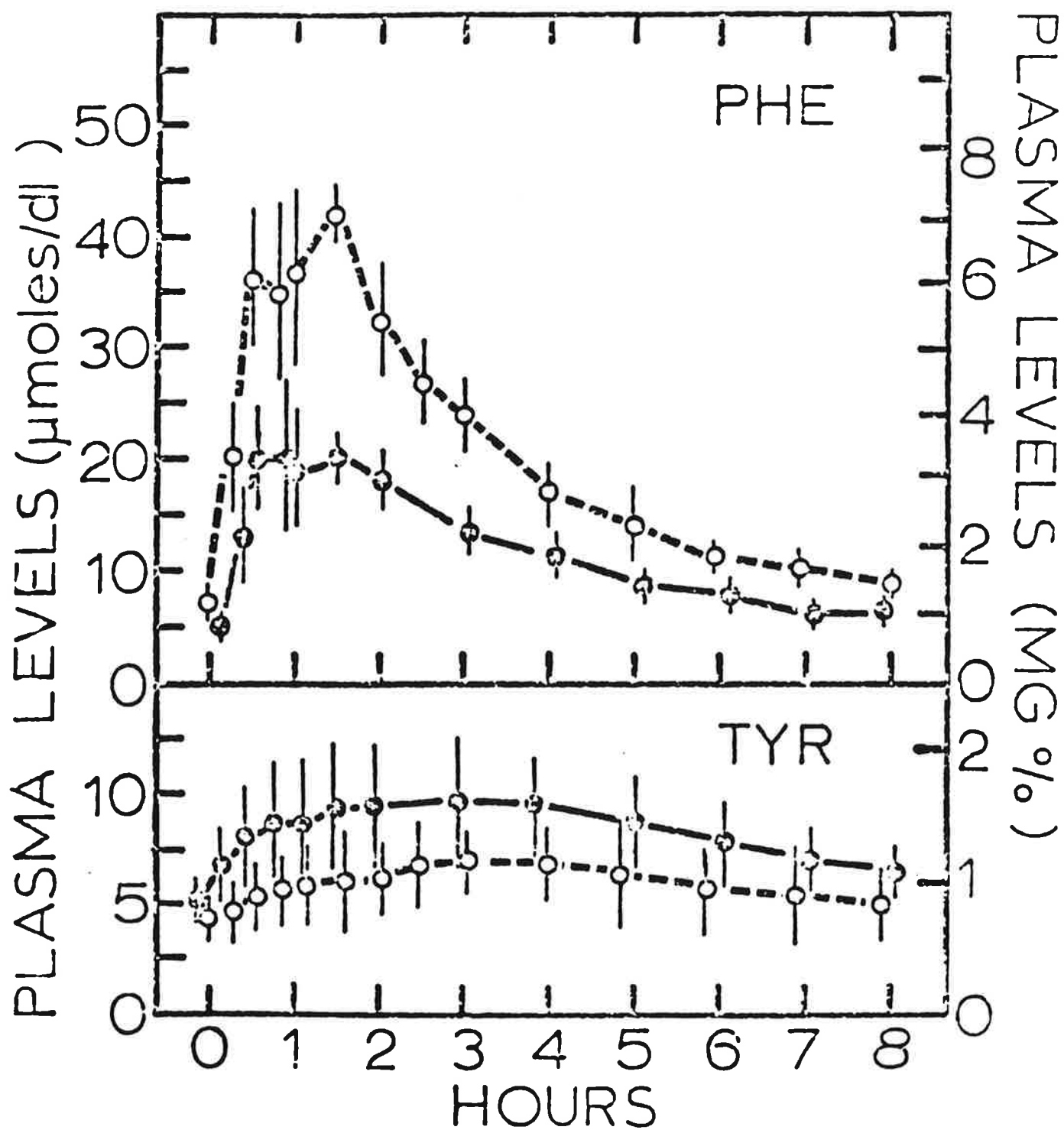


FIGURE 2: MEAN (\pm S.D.) PLASMA PHENYLALANINE LEVELS IN 6 NORMAL SUBJECTS ADMINISTERED ASPARTAME AT 200 MG PER KG BODY WEIGHT (●—●) AND 5 FEMALE SUBJECTS HETEROZYGOUS FOR PHENYLKETONURIA ADMINISTERED ASPARTAME AT 100 MG PER KG BODY WEIGHT (○---○).

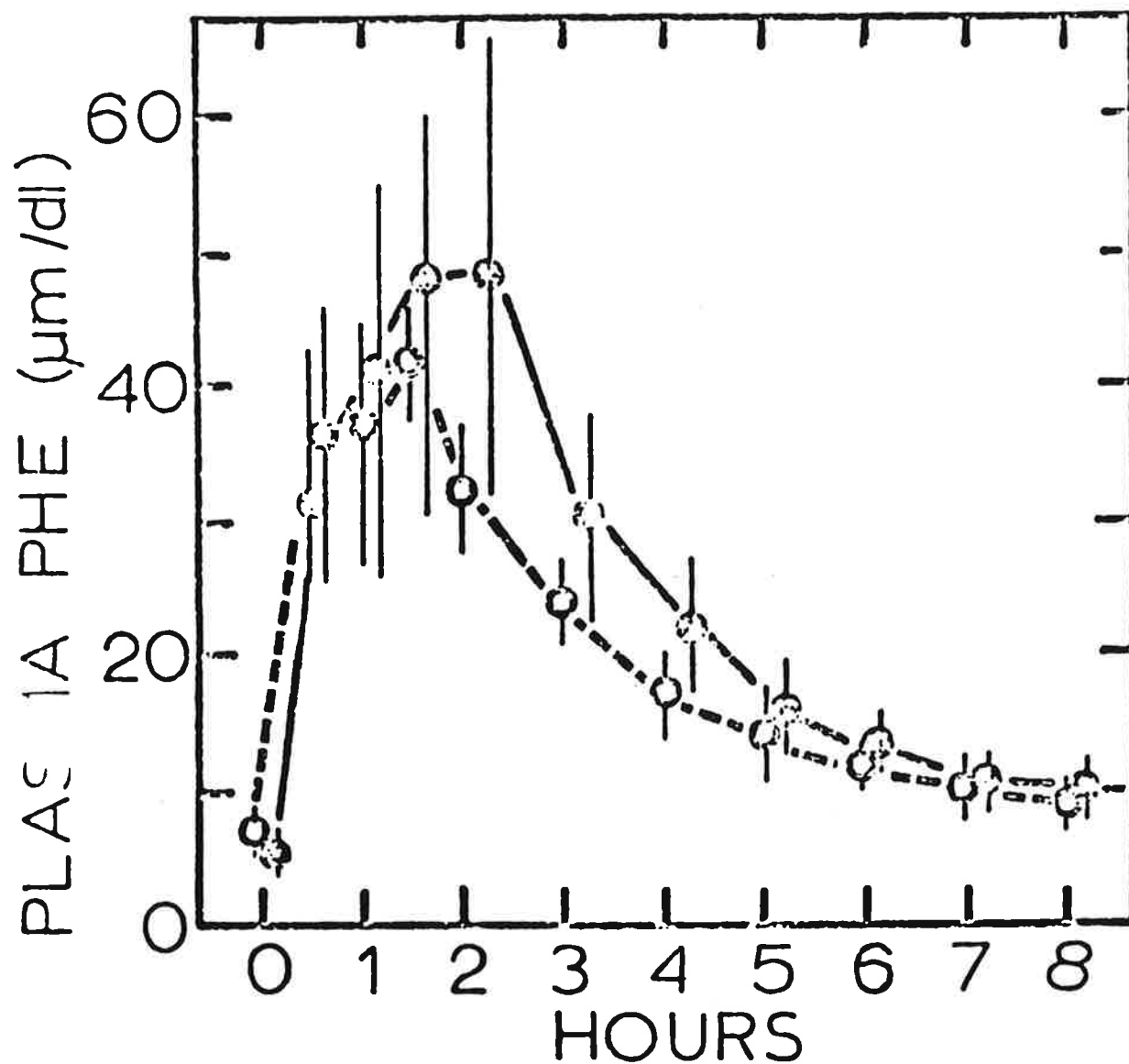
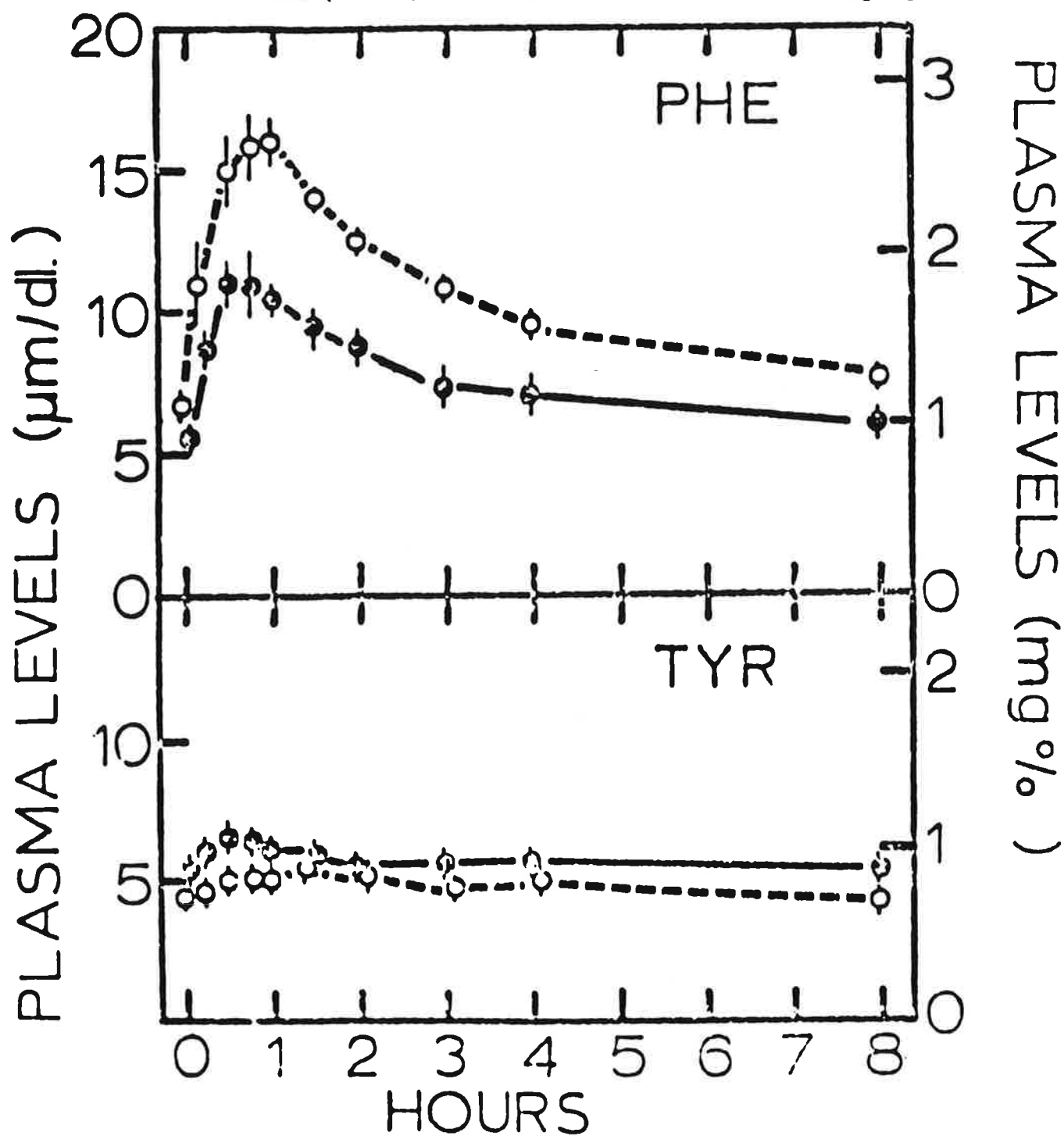


FIGURE 3: MEAN (\pm S.E.M.) PLASMA PHENYLALANINE AND TYROSINE LEVELS IN 12 NORMAL ADULT SUBJECTS (●—●) and 8 SUBJECTS HETEROZYGOUS FOR PHENYLKETONURIA (○---○) AFTER ASPARTAME LOADING (34 Mg/kg).



IOWA NORMALS DIET=ASPARTAME SOL DOSE=100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

DATE TWO/27/77, AUGUST 5, 1977

PLASMA AMINO ACID, ISI ASPAMINOCYTURATE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52275	65.00		1.37	1.76	1.67	1.82	1.75	1.61	1.55	.	1.47	1.61	1.71	1.92	1.29	2.08	.	1.25
K. SMITH	52275	55.00		1.23	1.35	1.33	1.27	1.25	1.12	2.33	.	1.35	1.17	1.12	1.08	1.04	1.10	.	1.74
L. SMITH	72475	78.00		2.38	2.19	2.20	2.02	2.11	2.11	2.04	.	1.91	1.70	1.91	1.92	1.79	1.94	.	2.03
M. WATTS	53875	55.00		1.00	1.10	0.99	0.94	1.13	1.07	0.92	.	0.92	0.93	0.99	1.05	1.31	1.29	.	1.47
P. WALKER	68075	76.00		2.05	1.96	2.03	2.75	2.09	1.45	1.75	.	1.69	1.53	1.49	1.42	1.77	1.90	.	1.37
R. WATTS	51575	82.70		2.02	1.90	2.31	2.00	1.04	1.07	1.03	.	1.05	1.60	1.77	1.00	2.01	2.02	.	1.60
MEAN				1.71	1.72	1.75	1.72	1.71	1.54	1.74	.	1.53	1.44	1.50	1.56	1.53	1.74	.	1.34
SD				0.532	0.417	0.721	0.004	0.426	0.411	0.401	.	0.369	0.320	0.371	0.431	0.422	0.405	.	0.406
N				6	6	6	6	6	6	6	.	6	6	6	6	6	6	.	6

FRYMOOCYTE AMINO ACID ISI ASPAMINOCYTURATE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52275	65.00		0.01	0.01	0.01	0.01	0.01	0.01	0.01	.	0.01	0.01	0.01	0.01	0.01	0.01	.	.
K. SMITH	52275	55.00		2.00	3.94	1.53	1.40	1.43	1.23	1.31	.	1.00	1.31	0.95	0.01	1.21	1.20	.	1.32
L. SMITH	72475	78.00		.	.	.	.	.	.	.	.	.	.	.	0.01	0.01	0.01	.	.
M. WATTS	53875	55.00		.	.	.	.	.	.	.	.	.	.	.	0.01	0.01	0.01	.	.
P. WALKER	68075	76.00		1.16	1.40	2.40	0.41	3.24	4.02	.	.	.	1.02	0.61	1.11	.	.	.	6.14
R. WATTS	51575	82.70		1.06	1.80	1.33	0.61	1.50	2.05	0.66	.	0.50	1.05	0.52	0.56	0.41	0.41	.	3.73
MEAN				0.099	1.907	1.237	0.716	1.010	2.556	0.910	.	0.700	0.933	0.470	0.635	0.633	0.607	.	3.400
SD				3	3	3	3	3	3	2	.	2	3	3	4	3	3	.	2
N				3	3	3	3	3	3	2	.	2	3	3	4	3	3	.	2

PLASMA AMINO ACID ISI ALANINE

[illegible]

ERYTHROCYTE AMINO ACID 191 ALANINE

SUBJECT	DATE	WEIGHT TIME	0	15	30	45	00	05	10	150	100	240	300	360	MIN	7	HR	12	24	H
J. FLATT	53775	65.00	20.40	20.00	21.32	24.21	26.54	29.05	40.75	.	43.60	36.01	34.21	35.00	20.10	23.00	.	21.1		
K. SMITH	52275	59.00	30.42	34.90	35.55	39.72	45.32	36.51	31.61	.	50.60	50.50	54.05	43.03	30.50	22.00	.	24.4		
L. SMITH	72275	70.00	33.30	29.70	20.70	20.10	25.70	29.00	37.60	.	30.00	34.30	25.40	23.50	20.10	20.00	.	20.4		
M. WATTS	53775	55.00	10.00	23.50	24.05	27.72	29.21	26.45	33.41	.	24.65	25.72	25.71	10.50	20.10	10.15	.	20.4		
N. PALME	00075	76.00	23.70	20.51	27.42	32.05	35.52	32.94	33.00	.	32.05	26.05	25.05	22.47	20.07	20.00	.	26.4		
R. WATTS	51075	02.70	30.07	33.75	37.05	43.00	30.00	43.45	42.04	.	33.74	20.30	25.61	22.57	19.00	10.00	.	23.1		
MEAN			27.03	30.04	30.00	34.23	30.10	34.00	36.41	.	30.50	35.01	31.04	27.02	20.27	23.00	.	23.4		
SD			8.360	4.005	4.072	5.900	0.020	0.310	4.364	.	11.740	12.300	11.757	0.020	0.402	5.071	.	5.62		
N			6	6	6	6	6	6	6	.	6	6	6	6	6	6	.	6		

PLASMA AMINO ACID 18: ARGinine

[illegible]

ERYTHROCYTE AMINO ACID 131 ARGININE

[illegible]

0116 TUNACAY, AUGUST 3, 1970

025.

	TIME	15	20	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
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[illegible]

FILE	DATE	TIME	MIN	HR	HR	HR	HR
13	20	45	66	90	120	150	180
			240	360	480	600	720

[illegible]

IOWA NORMALS DIET-ASPARTAME50% DOSE-100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1976

500

PLASMA AMINO ACID ISI ASPARTATE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		0.13	0.33	0.43	0.43	0.20	0.20	0.21			0.10	0.09	0.10	0.05	0.05	0.00	0.05
K. SMITH	52775	55.00		0.24	0.25	0.20	0.20	0.13	0.37	0.50			0.20	0.16	0.10	0.10	0.05	0.05	0.05
L. SMITH	72475	70.00		0.15	0.27	0.37	0.22	0.12	0.23	0.12			0.12	0.10	0.10	0.05	0.05	0.05	0.05
M. WATT	53075	55.00		0.12	0.33	0.26	0.10	0.10	0.09	0.05			0.05	0.04	0.05	0.05	0.05	0.05	0.05
N. BAKER	00075	70.00		0.13	0.32	0.32	0.20	0.30	0.44	0.31			0.11	0.13	0.11	0.13	0.13	0.15	0.11
R. WATT	51575	82.70		0.24	0.61	0.05	0.50	0.20	0.40	0.37			0.17	0.15	0.10	0.15	0.10	0.12	0.15
MEAN				0.10	0.30	0.43	0.29	0.20	0.20	0.27			0.14	0.11	0.09	0.09	0.00	0.00	0.14
SD				0.040	0.140	0.234	0.150	0.095	0.130	0.101			0.070	0.044	0.022	0.041	0.035	0.040	0.171
N				0	0	0	0	0	0	0			0	0	0	0	0	0	0

ERYTHROCYTE AMINO ACID ISI ASPARTATE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		25.21	24.15	25.06	23.50	26.21	20.21	24.40			26.92	20.01	25.50	24.01	24.51	23.07	20.01
K. SMITH	52775	55.00		23.65	26.40	24.07	24.10	24.21	20.56	29.34			26.17	25.26	22.35	24.00	23.55	20.24	23.00
L. SMITH	72475	70.00		23.11	26.10	20.10	23.40	26.20	20.27	23.01			20.11	20.11	25.01	20.10	27.10	20.16	23.10
M. WATT	53075	55.00		15.07	14.07	15.29	16.19	15.00	13.00	16.41			12.30	14.54	14.20	10.72	10.02	14.05	10.05
N. BAKER	00075	70.00		26.17	20.50	20.74	27.07	27.70	27.15	24.12			27.51	24.70	20.21	25.02	25.32	24.44	25.07
R. WATT	51575	82.70		25.40	26.64	27.40	24.45	20.40	20.11	25.00			27.02	20.00	27.20	27.00	20.07	25.12	24.00
MEAN				23.50	24.44	24.01	23.43	24.70	23.06	23.01			24.60	24.40	23.04	24.10	24.05	23.50	25.43
SD				5.010	5.342	0.004	3.760	4.001	0.013	4.177			0.071	0.041	4.000	4.030	4.114	4.440	5.400
N				0	0	0	0	0	0	0			0	0	0	0	0	0	0

IOWA NORMALS DIET=ASPARTAME30L 003201FB MG/KG

IOHA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

PKU VS NORMALS

8116 THURSDAY, AUGUST 3, 1976

023

PLASMA AMINO ACID 131 CITRULLINE

SUBJECT	DATE	NIGHT TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J.	F.LATY	52275	67.00	2.00	2.47	2.62	1.00	1.77	1.67	1.41	.	1.50	2.51	2.41	2.00	8.00	2.44	.
K.	S.WITM	52275	55.00	3.21	4.42	4.56	1.53	0.53	0.42	0.64	.	2.45	2.11	2.10	2.00	2.42	2.73	4.75
L.	S.WITM	72475	70.00	3.57	2.92	2.40	2.28	2.83	1.77	1.69	.	1.60	2.37	2.70	2.46	2.01	.	3.40
M.	WVATF	53075	55.00	2.57	1.96	1.30	1.10	1.19	1.03	1.04	.	1.43	1.74	2.20	2.41	2.99	2.32	2.56
N.	KALKE	53075	70.00	2.23	1.66	1.30	1.17	1.05	0.78	1.00	.	1.21	1.44	1.42	1.43	1.24	.	1.75
O.	WVATF	51575	02.70	3.00	2.63	2.10	2.00	1.01	1.70	1.50	.	2.36	2.70	2.02	2.95	3.00	2.63	5.15
MEAN				2.03	2.00	2.20	1.70	1.41	1.32	1.24	.	1.61	2.16	2.30	2.04	2.30	2.42	3.14
SD				0.473	0.060	1.115	0.475	0.506	0.571	0.507	.	0.560	0.502	0.615	0.502	0.661	0.606	0.900
N				6	6	6	6	6	6	6	.	6	6	6	6	6	6	6

IOWA NORMALS DIET-ASPARTAME SOL DOSE-100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 5, 1970

PLASMA AMINO ACID 181 GLUTAMINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52273	65.00		64.49	60.37	60.56	67.01	61.54	60.63	60.60		50.61	60.19	62.32	66.73	61.17	61.30		62.70
K. SMITH	52273	53.00		64.70	63.76	61.20	74.41	69.60	64.05	70.17		70.53	63.52	67.21	60.60	67.50	64.61		60.13
L. SMITH	72473	70.00		67.70	50.40	59.90	62.40	51.40	61.40	59.70		56.90	50.40	53.60	54.20	54.40	63.00		64.50
M. WATT	53073	53.00		40.10	40.00	40.11	40.61	34.01	50.72	54.10		51.02	40.90	50.63	47.02	50.11	50.64		62.31
N. WATNE	60373	76.00		70.04	63.06	63.51	73.51	66.64	60.02	60.91		60.70	50.10	60.00	61.32	50.10	60.16		60.91
R. WATT	51573	82.70		72.03	64.19	70.20	71.02	63.07	60.30	57.25		54.43	63.63	63.73	57.13	54.41	52.43		50.00
MEAN				60.04	64.94	65.77	66.10	61.33	60.07	60.30		50.70	50.64	50.00	50.20	50.40	50.17		63.36
SD				11.770	11.501	10.770	9.690	6.906	2.176	0.309		6.699	5.965	6.290	7.746	5.001	4.502		4.432
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 191 GLUTAMINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52273	65.00		50.17	40.46	47.00	40.70	46.51	70.03	46.40		47.40	44.21	45.91	44.10	40.74	40.13		40.41
K. SMITH	52273	53.00		60.90	50.74	53.00	51.77	55.42	50.00	50.65		55.33	50.72	52.00	47.30	42.72	50.44		44.22
L. SMITH	72473	70.00		57.00	60.20	60.30	53.60	60.10	50.91	61.00		50.40	57.00	57.40	57.30	57.30	57.20		55.00
M. WATT	53073	53.00		36.97	35.74	41.02	42.05	41.04	37.40	41.41		37.10	41.30	30.31	34.43	37.51	33.90		37.50
N. WATNE	60073	76.00		40.00	50.50	40.01	51.75	51.33	40.01	51.60		52.04	50.00	40.31	40.21	47.20	43.42		42.60
R. WATT	51573	82.70		40.30	40.94	42.97	46.47	43.33	46.54	42.44		41.91	41.51	42.40	39.02	37.73	30.14		35.03
MEAN				50.36	50.41	48.00	49.40	49.20	40.21	40.03		40.72	47.74	47.57	45.05	43.70	44.21		43.04
SD				0.261	0.791	7.101	4.564	6.702	6.075	7.220		6.124	6.023	6.060	7.004	7.543	6.074		7.576
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

PLASMA AMINO ACID 181 GLYCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		22.72	20.30	20.36	19.03	18.75	19.01	19.07		17.46	18.15	17.90	18.21	17.17	17.39		20.11
K. SMITH	52273	55.00		43.07	41.07	40.10	37.76	36.32	33.72	29.04		31.39	32.31	32.47	30.70	30.51	29.48		33.54
L. SMITH	72075	70.00		27.20	23.40	22.90	23.70	22.40	23.00	22.00		21.40	21.40	22.90	23.70	22.40	24.20		27.30
M. FLATT	53071	55.00		15.00	10.14	15.70	16.04	16.36	10.75	15.07		15.75	15.94	15.00	15.41	15.00	15.31		19.07
N. WALKER	60075	70.00		24.97	22.06	21.90	24.69	22.20	10.04	19.04		18.39	15.97	16.40	16.03	16.01	17.40		20.07
R. FLATT	51575	82.70		21.05	20.95	23.10	22.27	19.80	18.36	17.24		16.75	15.70	15.43	17.31	16.00	16.20		20.00
MEAN				26.45	24.65	24.02	24.10	22.00	21.61	20.30		20.26	19.92	20.05	20.33	19.09	20.00		23.70
SD				0.070	0.644	0.330	7.037	7.007	0.200	4.940		5.001	0.441	0.713	0.030	0.714	0.013		5.524
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 191 GLYCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		24.00	22.30	25.30	24.40	26.05	24.50	24.21		21.10	20.75	23.95	24.45	24.21	20.94		26.01
K. SMITH	52273	55.00		31.30	31.01	34.03	32.15	31.07	32.02	32.04		20.17	26.49	27.93	26.21	30.04	30.74		30.05
L. SMITH	72075	70.00		20.00	20.10	31.00	20.40	26.90	31.91	31.16		30.61	29.10	20.00	27.60	29.00	30.10		29.70
M. FLATT	53071	55.00		33.67	31.67	29.33	32.01	22.00	32.01	20.13		32.00	31.30	32.07	31.72	20.00	30.04		30.01
N. WALKER	60075	70.00		31.36	31.13	31.03	32.47	32.95	31.06	32.00		31.10	32.20	31.01	32.02	30.21	30.21		31.27
R. FLATT	51575	82.70		29.04	31.10	30.13	31.91	20.10	20.92	20.79		27.03	31.05	27.01	25.11	24.07	24.77		20.70
MEAN				29.00	29.41	30.42	30.40	29.26	30.50	29.55		29.40	29.04	28.56	27.05	23.37	20.00		29.20
SD				3.201	3.537	3.082	3.306	2.000	3.110	3.013		3.900	2.500	2.047	3.292	0.005	2.395		2.104
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

IOWA NORMALS DIET-ASPARTANESOL DOSE=180 MG/KG

IOWA PKU STUDY AT 180 MG/KG ASPARTANE
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1976 10

PLASMA AMINO ACID 18: HISTIDINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		9.60	10.24	11.01	10.00	9.40	9.60	9.05		8.41	10.17	10.30	10.60	10.23	10.21		10.60
K. SMITH	52275	55.00		12.60	11.00	10.00	10.51	9.30	9.47	9.40		9.80	8.61	9.30	6.75	7.11	8.43		10.07
L. SMITH	72475	78.00		9.40	8.35	8.56	8.66	7.90	7.75	7.60		7.25	7.45	8.37	8.50	7.93	8.43		8.25
M. WATT	53075	55.00		12.20	12.00	11.31	12.10	12.32	12.70	11.01		12.17	12.41	13.02	13.71	13.10	13.31		13.30
N. WALKER	60075	70.00		7.00	7.72	7.50	8.00	7.40	6.46	6.74		6.97	6.66	6.70	6.55	6.00	6.97		7.10
R. WATT	51575	82.70		10.00	10.42	11.00	10.63	9.60	8.90	8.55		9.14	9.31	9.27	9.05	8.55	9.35		11.00
MEAN				10.49	10.25	10.00	10.14	9.30	9.10	8.64		8.97	9.10	9.35	9.34	8.13	8.62		10.50
SD				1.777	1.000	1.502	1.200	1.007	2.134	1.603		1.010	2.032	2.000	2.003	2.400	2.122		2.037
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 18: HISTIDINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		9.60	8.90	9.10	5.00	9.11	7.01	8.61		9.10	9.00	8.01	7.05	8.15	8.44		7.50
K. SMITH	52275	55.00		7.77	6.00	7.20	7.00	7.04	7.10	7.30		8.22	5.00	6.02	7.25	7.20	9.30		8.25
L. SMITH	72475	70.00		6.20	6.00	7.40	6.30	6.02	4.32	6.41		8.40	5.65	5.45	6.45	6.01	6.30		6.17
M. WATT	53075	55.00		8.41	9.00	9.54	9.00	10.03	8.10	10.71		7.01	8.27	8.60	8.40	8.00	9.02		10.21
N. WALKER	60075	70.00		6.27	7.00	6.55	6.56	7.71	6.00	7.10		6.65	8.70	9.00	8.61	6.45	6.61		8.94
R. WATT	51575	82.70		6.61	8.20	6.21	7.22	8.75	8.10	7.00		6.70	7.12	5.50	7.51	6.77	8.15		7.70
MEAN				7.90	8.32	7.67	7.32	8.30	7.04	8.01		7.37	7.76	7.20	7.15	7.35	8.90		7.82
SD				1.360	1.010	1.350	1.455	1.150	1.404	1.515		1.325	1.704	1.000	1.040	1.020	1.424		1.376
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

PLASMA AMINO ACID IBI ISOLEUCINE

SUBJECT	DATE	WEIGHT TIME		0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 hr	8 hr	12 hr	24 hr
J. FLATT	52275	65.00		0.75	0.21	5.37	4.91	4.21	3.53	3.07	.	3.23	4.09	4.49	4.01	4.03	5.35	.	6.14
K. SWITH	52275	55.00		4.97	4.12	3.74	2.97	2.33	1.91	4.36	.	3.00	2.17	3.66	3.27	3.14	3.42	.	5.44
L. WATTH	52275	70.00		0.60	9.20	6.93	0.41	-0.70	5.36	4.05	.	4.30	4.03	5.03	5.66	6.44	5.01	.	7.44
N. WAART	53875	55.00		4.25	4.30	3.75	3.55	3.45	2.41	2.26	.	2.94	3.21	3.03	4.29	4.44	4.00	.	5.00
R. WALKE	60975	70.00		5.60	4.90	4.76	3.66	3.06	3.16	2.97	.	3.37	3.27	3.70	4.02	4.14	4.70	.	4.00
R. WAART	51575	82.70		6.07	5.07	0.30	4.01	3.65	3.21	R.91	.	3.30	3.00	4.14	0.09	5.14	5.10	.	7.02
MEAN				6.00	5.76	4.00	4.07	3.04	3.26	3.37	.	3.45	3.33	4.10	4.31	4.30	4.00	.	6.05
SD				1.50	1.05	1.19	1.207	1.176	1.107	0.920	.	0.360	0.032	0.040	0.030	0.07	0.700	.	0.03
N				0	0	0	0	0	0	0	.	0	0	0	0	0	0	.	0

LEUTHROCYTE AMINO ACID 181 ISOLEUCINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52773	65.00	4.10	3.68	3.40	3.03	2.73	1.80	1.53	.	.	2.72	2.50	2.00	2.04	3.23	.	4.13
M. SMITH	52275	53.00	3.87	2.48	6.03	1.76	1.43	3.27	3.42	.	.	1.11	1.74	1.01	1.04	2.43	.	5.17
L. SMITH	52275	70.00	5.30	4.88	4.53	3.70	3.57	2.76	2.67	.	.	2.72	3.20	2.04	3.33	3.54	.	4.40
M. WATTS	53475	55.00	2.41	2.30	1.93	1.72	1.68	1.55	1.50	.	.	2.07	3.24	2.42	2.94	2.78	.	5.75
P. MALE	68975	78.00	8.40	9.60	0.71	2.02	2.14	1.96	3.15	.	.	1.00	2.05	2.35	2.37	2.70	.	4.23
R. WATTS	51575	82.70	4.47	6.94	6.60	3.04	0.57	2.80	1.78	.	.	2.37	2.88	6.10	4.02	3.65	.	8.54
MEAN			3.10	3.05	3.22	2.66	2.05	2.24	2.34	.	.	2.22	2.65	2.07	3.07	3.11	.	0.37
SD			2.30	2.70	2.42	0.807	1.530	0.644	0.850	.	.	0.520	0.875	0.875	0.875	0.437	.	1.613

10MA NORMALS DIET-ASPARTAME SOL NOSEC1000 MG/KO

10MA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

8116 THURSDAY, AUGUST 3, 1972 12

PLASMA AMINO ACID 191 LEUCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		12.70	11.75	10.03	9.51	8.31	6.03	6.01	6.46	6.35	4.30	6.52	9.90	10.13	11.70		12.34
K. SMITH	52275	55.00		10.94	9.21	8.43	6.64	5.64	4.42	6.72	6.53	4.41	6.70	11.50	7.90	7.20	8.00		10.01
L. SMITH	72475	70.00		13.90	14.20	12.70	11.00	10.50	9.64	8.53	8.41	6.70	7.46	10.50	11.00	11.00	12.70		10.70
M. WATT	53075	55.00		9.01	9.34	8.00	6.05	7.06	5.06	5.20	6.71	7.46	9.35	10.50	10.50	11.00	11.29		12.33
N. WALKER	60975	70.00		12.33	11.34	10.73	11.41	9.41	7.00	7.21	6.11	6.10	10.05	9.25	9.72	10.17	11.47		13.01
R. WATT	51575	82.70		14.30	13.50	12.01	11.47	9.74	8.47	7.68	9.10	10.05	10.65	12.40	12.40	12.04	12.05		10.50
MEAN				12.53	11.57	10.00	9.05	8.44	7.17	7.30	7.36	7.90	9.44	10.35	10.35	10.60	11.33		13.76
SD				2.420	2.070	2.010	2.063	1.624	1.075	1.622	1.127	1.021	1.607	1.732	1.935	1.697	1.697		2.305
				6	6	6	6	6	6	6	6	6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 191 LEUCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		8.30	8.03	7.52	6.47	5.70	4.27	3.37	.	.	3.00	5.90	6.34	6.06	6.74	7.72	10.31
A. SMITH	52275	55.00		6.10	5.20	4.60	5.96	6.62	7.35	7.53	.	.	3.90	2.43	3.77	3.92	4.24	5.07	6.65
L. SMITH	72475	70.00		10.70	10.00	9.11	7.01	7.15	6.30	5.60	.	.	5.70	6.30	7.20	7.40	8.10	8.50	10.00
M. WATT	53075	55.00		5.40	6.10	6.90	4.05	4.54	3.63	3.77	.	.	3.80	5.07	7.00	6.50	7.00	7.01	7.41
N. WALKER	60975	70.00		8.80	9.34	8.05	6.20	5.37	3.09	4.30	.	.	4.00	5.20	6.12	6.12	6.30	7.01	8.00
R. WATT	51575	82.70		10.40	10.00	9.05	8.06	6.93	5.45	4.02	.	.	8.00	6.52	7.07	10.00	8.00	7.03	10.00
MEAN				8.35	8.10	7.07	6.42	6.00	5.36	4.90	.	.	4.60	5.25	6.40	6.10	6.70	7.31	9.12
SD				2.165	2.000	1.761	1.449	1.014	1.301	1.460	.	.	0.952	1.402	1.436	0.360	1.411	0.904	1.037
N				6	6	6	6	6	6	6	.	.	6	6	6	6	6	6	6

PLASMA AMINO ACID 18: LYSINE

[illegible]

ENVIRONMENTAL AMINO ACID 131 LYSINE

[illegible]

PLASMA AMINO ACID 131 METHIONINE

[illegible]

ERYTHROCYTE AMINO ACID 191 METHIONINE

[illegible]

IOWA NORMALS DIET-ASPARTAME30L DOSE-100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1978 17

PLASMA AMINO ACID 131 ORNITHINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	69.00		6.00	5.80	6.15	5.39	5.61	5.37	5.41	.	5.25	5.10	0.31	0.20	0.30	5.00	.	0.30
K. SMITH	52275	55.00		10.53	16.90	15.07	13.17	11.91	17.52	19.33	.	16.87	15.11	15.12	13.29	12.00	13.06	.	14.30
L. SMITH	72475	78.00		0.00	7.02	7.74	8.10	7.52	7.53	7.94	.	7.43	6.90	7.10	6.97	6.50	6.41	.	6.37
M. WATT	53075	55.00		3.50	4.00	3.63	4.71	3.99	4.00	3.79	.	3.52	3.43	3.17	3.29	3.30	3.50	.	5.24
N. WATT	60075	76.00		3.50	5.07	5.00	7.13	5.00	5.06	5.70	.	5.11	4.74	4.57	4.10	4.20	4.20	.	5.30
N. WATT	51575	82.70		4.04	5.25	5.45	5.75	5.12	5.41	4.01	.	5.03	4.97	4.00	5.44	5.00	4.41	.	5.60
MEAN				7.03	7.59	7.40	7.75	6.68	7.62	7.04	.	7.28	6.73	6.69	6.90	6.30	6.38	.	7.17
SD				5.530	4.720	4.295	3.834	2.807	4.973	5.702	.	4.099	4.257	4.320	4.321	3.433	3.052	.	3.541
N				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ERYTHROCYTE AMINO ACID 131 ORNITHINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	69.00		16.04	10.05	16.14	11.07	16.41	15.44	14.08	.	16.66	16.01	15.07	13.91	13.42	14.73	.	19.20
K. SMITH	52275	55.00		11.34	13.07	12.32	14.30	14.30	13.59	13.25	.	14.37	13.51	13.55	12.75	12.10	10.72	.	11.13
L. SMITH	72475	78.00		15.90	16.50	17.00	15.00	15.00	12.90	10.10	.	16.20	15.90	13.30	16.00	17.00	10.20	.	14.10
M. WATT	53075	55.00		7.55	7.47	8.45	8.97	7.00	8.99	8.22	.	6.40	6.90	9.40	9.20	8.00	5.90	.	0.00
N. WATT	60075	76.00		9.29	11.00	11.00	12.30	13.20	13.04	12.04	.	13.51	12.20	13.02	10.00	11.00	0.94	.	12.01
N. WATT	51575	82.70		11.40	10.12	11.41	12.00	10.20	12.96	12.54	.	0.05	0.75	10.13	9.04	0.24	0.74	.	11.15
MEAN				12.02	12.02	12.03	12.50	12.07	12.02	12.02	.	12.07	12.40	12.05	11.06	12.07	11.05	.	12.04
SD				3.000	3.003	3.107	2.126	3.503	2.107	2.074	.	4.120	3.700	2.406	2.093	3.321	3.004	.	3.540
N				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PLASMA AMINO ACID IS: PROLINE

SUBJECT	DATE	WEIGHT TIME	0	15	30	45	00	90	120	:50	100	240	300	360	MIN	7	HR	0	HR	12	HR	24	HR
J. FLATT	52775	65.00	23.59	26.93	29.67	27.90	26.45	28.42	28.62	.	24.39	28.65	22.75	27.08	24.47	17.51	.	10.3	.	.	.	.	.
K. SMITH	52275	55.00	18.17	26.95	36.61	24.29	23.01	28.97	29.95	.	23.71	24.38	21.32	16.74	16.58	16.98	.	20.7	.	.	.	.	.
L. SMITH	52475	76.00	26.04	24.68	27.98	28.88	28.58	31.74	30.08	.	27.48	23.50	23.90	23.78	21.44	21.06	.	23.4	.	.	.	.	.
N. WATTS	53875	55.00	10.49	14.11	15.31	15.50	17.46	17.06	14.95	.	11.04	11.16	9.59	9.39	9.22	9.78	.	10.4	.	.	.	.	.
R. WATTS	60975	76.00	19.42	21.95	24.19	29.11	28.77	22.11	22.68	.	18.59	16.43	16.31	15.75	14.17	15.31	.	29.9	.	.	.	.	.
R. WATTS	51375	82.70	21.08	24.14	30.52	29.11	27.26	26.07	22.73	.	19.68	17.02	16.01	17.25	16.51	18.22	.	25.4	.	.	.	.	.
MEAN			19.74	23.11	25.67	26.34	25.31	25.65	24.61	.	20.93	18.08	18.46	17.08	16.46	18.93	.	23.0	.	.	.	.	.
SD			5.640	4.795	5.066	5.999	4.304	5.688	5.984	.	5.588	4.910	5.537	6.214	4.513	4.243	.	5.10	.	.	.	.	.
N			6	6	6	6	6	6	6	.	6	6	6	6	6	6	.	6	.	.	.	.	.

ERYTHROCYTE AMINO ACID 198 PROLINE

[illegible]

ICMA NORMALS DIET-ASPARTAME30L DOSE-100 MG/KG

ICMA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0116 THURSDAY, AUGUST 31, 1978

011

PLASMA AMINO ACID 191 SERINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		14.14	15.37	15.00	15.58	14.55	15.39	15.26		15.11	15.10	15.50	15.00	15.05	15.10		12.17
K. SMITH	52275	55.00		20.40	20.00	21.31	21.22	19.00	19.01	15.90		18.13	17.50	17.53	15.50	15.00	15.52		16.07
L. SMITH	72475	70.00		12.54	11.00	11.50	11.00	11.10	11.00	11.10		10.60	10.50	11.30	11.10	14.70	11.02		11.00
M. WATT	53075	55.00		11.05	13.05	12.51	13.10	13.00	13.03	11.95		11.69	11.07	11.50	12.00	12.53	12.50		12.07
N. WALKE	60075	70.00		13.10	13.00	13.00	14.00	13.00	11.41	12.11		11.10	10.57	11.10	11.20	11.54	11.75		12.16
N. WATT	51575	82.70		12.22	12.13	14.00	14.03	12.10	11.04	11.00		10.74	10.51	10.12	11.07	11.55	10.70		12.05
MEAN				14.06	14.20	14.50	15.12	14.24	15.01	12.50		12.57	12.32	12.60	12.07	12.50	12.43		13.00
SD				3.252	3.591	3.407	3.240	3.010	3.203	1.040		2.060	2.700	2.000	1.733	1.610	1.603		1.002
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 191 SERINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		15.37	14.40	14.50	14.21	14.06	14.26	13.15		13.73	15.11	14.03	15.21	12.00	12.02		15.01
K. SMITH	52275	55.00		17.25	17.00	15.55	15.04	15.05	15.10	13.25		16.22	16.50	10.90	10.23	13.70	17.10		15.04
L. SMITH	72475	70.00		19.30	17.10	15.00	14.40	15.40	14.40	10.50		14.70	14.00	15.00	14.40	14.40	14.50		15.10
M. WATT	53075	55.00		12.46	13.20	14.04	13.32	12.41	11.53	10.41		12.45	13.13	13.00	14.40	14.40	13.54		15.72
N. WALKE	60075	70.00		11.07	14.07	12.70	12.02	14.07	12.01	10.25		12.57	11.24	12.10	0.03	11.00	11.13		10.41
N. WATT	51575	82.70		11.95	12.14	11.07	11.57	9.01	10.02	11.03		10.60	10.77	11.00	11.51	10.27	10.15		10.72
MEAN				14.05	14.01	14.05	13.00	13.45	12.52	13.00		15.36	15.50	13.90	13.20	13.10	13.22		13.53
SD				2.020	2.252	1.005	1.400	2.400	1.722	1.033		1.955	2.277	2.155	2.300	2.074	2.515		2.517
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

012

ERYTHROCYTE AMINO ACID 181 TAURINE

1

IOWA NORMALS DICTE=ASPARTAME90L 003E=100 MG/AD

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1976

PLASMA AMINO ACID 191 THREONINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		16.00	18.30	18.00	18.40	17.60	18.02	18.13		14.01	14.11	14.74	14.60	13.11	13.24		16.03
K. SMITH	52275	55.00		15.25	15.37	15.37	15.20	14.80	14.45	14.52		12.76	12.30	12.18	11.31	10.40	10.59		13.03
L. SMITH	72475	70.00		17.70	15.90	15.60	15.90	15.10	16.60	14.70		13.60	12.50	13.50	13.30	12.20	13.10		15.10
M. WATY	53275	55.00		16.30	17.55	16.66	17.70	19.17	18.75	15.00		15.46	15.23	14.70	15.17	14.76	14.52		16.37
N. WATKE	60975	76.00		12.46	12.11	12.20	13.07	13.50	11.53	10.20		9.44	8.61	8.82	8.63	8.01	9.14		12.57
N. WATY	51575	82.70		13.02	13.02	16.24	15.44	13.34	12.31	11.53		10.35	10.14	9.60	11.57	10.46	9.73		15.03
MEAN				15.20	15.30	15.01	16.11	16.57	14.64	13.84		12.60	12.16	12.31	12.44	11.04	11.72		13.04
SD				2.134	2.462	1.403	1.600	2.570	2.750	2.392		2.201	2.452	2.505	2.440	2.143	2.103		1.290
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 191 THREONINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00		13.13	14.35	13.23	13.72	14.43	13.60	12.31		11.72	13.41	11.06	10.31	8.04	5.10		10.11
K. SMITH	52275	55.00		10.00	10.12	9.74	9.64	8.20	8.49	8.56		8.90	8.01	8.50	7.01	6.93	7.92		9.47
L. SMITH	72475	70.00		14.50	15.30	14.20	12.90	13.50	12.70	12.00		12.00	11.70	11.10	11.00	10.30	10.20		10.47
M. WATY	53275	55.00		9.34	10.46	13.93	10.90	10.09	8.60	11.01		10.65	9.10	10.50	9.46	8.45	8.70		12.20
N. WATKE	60975	76.00		8.26	9.37	9.04	8.02	11.07	7.72	4.43		7.03	7.00	7.60	6.07	7.32	6.41		7.06
N. WATY	51575	82.70		9.30	9.01	9.90	11.50	5.59	6.37	7.55		7.60	6.23	6.75	6.36	5.91	8.00		9.03
MEAN				10.70	11.08	11.31	10.01	10.70	9.50	9.41		9.70	9.39	9.42	8.50	8.16	7.40		10.01
SD				2.450	2.532	2.540	2.545	3.421	2.802	3.252		1.925	2.727	2.050	2.000	1.705	1.003		3.005
N				6	6	6	6	6	6	6		6	6	6	6	6	6		6

Calligraphy, Aug. 2, 1913

SUBJECT DATE	WEIGHT
10/1/54	10.0
10/15/54	10.0
10/29/54	10.0
11/12/54	10.0
11/26/54	10.0
12/10/54	10.0
12/24/54	10.0
1/7/55	10.0
1/21/55	10.0
2/4/55	10.0
2/18/55	10.0
3/4/55	10.0
3/18/55	10.0
4/1/55	10.0
4/15/55	10.0
4/29/55	10.0
5/13/55	10.0
5/27/55	10.0
6/10/55	10.0
6/24/55	10.0
7/8/55	10.0
7/22/55	10.0
8/5/55	10.0
8/19/55	10.0
9/2/55	10.0
9/16/55	10.0
9/30/55	10.0
10/14/55	10.0
10/28/55	10.0
11/11/55	10.0
11/25/55	10.0
12/9/55	10.0
12/23/55	10.0
1/6/56	10.0
1/20/56	10.0
2/3/56	10.0
2/17/56	10.0
3/3/56	10.0
3/17/56	10.0
3/31/56	10.0
4/14/56	10.0
4/28/56	10.0
5/12/56	10.0
5/26/56	10.0
6/9/56	10.0
6/23/56	10.0
7/7/56	10.0
7/21/56	10.0
8/4/56	10.0
8/18/56	10.0
9/1/56	10.0
9/15/56	10.0
9/29/56	10.0
10/13/56	10.0
10/27/56	10.0
11/10/56	10.0
11/24/56	10.0
12/8/56	10.0
12/22/56	10.0
1/5/57	10.0
1/19/57	10.0
2/2/57	10.0
2/16/57	10.0
2/28/57	10.0
3/13/57	10.0
3/27/57	10.0
4/10/57	10.0
4/24/57	10.0
5/8/57	10.0
5/22/57	10.0
6/5/57	10.0
6/19/57	10.0
7/3/57	10.0
7/17/57	10.0
7/31/57	10.0
8/14/57	10.0
8/28/57	10.0
9/11/57	10.0
9/25/57	10.0
10/9/57	10.0
10/23/57	10.0
11/6/57	10.0
11/20/57	10.0
12/4/57	10.0
12/18/57	10.0
1/1/58	10.0
1/15/58	10.0
1/29/58	10.0
2/12/58	10.0
2/26/58	10.0
3/12/58	10.0
3/26/58	10.0
4/9/58	10.0
4/23/58	10.0
5/7/58	10.0
5/21/58	10.0
6/4/58	10.0
6/18/58	10.0
7/2/58	10.0
7/16/58	10.0
7/30/58	10.0
8/13/58	10.0
8/27/58	10.0
9/10/58	10.0
9/24/58	10.0
10/8/58	10.0
10/22/58	10.0
11/5/58	10.0
11/19/58	10.0
12/3/58	10.0
12/17/58	10.0
1/3/59	10.0
1/17/59	10.0
1/31/59	10.0
2/14/59	10.0
2/28/59	10.0
3/14/59	10.0
3/28/59	10.0
4/11/59	10.0
4/25/59	10.0
5/9/59	10.0
5/23/59	10.0
6/6/59	10.0
6/20/59	10.0
7/4/59	10.0
7/18/59	10.0
7/31/59	10.0
8/14/59	10.0
8/28/59	10.0
9/11/59	10.0
9/25/59	10.0
10/9/59	10.0
10/23/59	10.0
11/6/59	10.0
11/20/59	10.0
12/4/	

	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 ...	8 ...	12 HR	24 ...
J. FLATT	52775	65.00	9.21	0.39	6.90	6.69	6.34	6.90	7.27	.	7.21	7.31	7.75	7.26	6.95	5.70	.
M. SMITH	52275	55.00	0.63	0.25	0.93	0.52	9.37	11.13	9.74	.	11.07	11.04	11.20	0.10	0.17	7.09	.
L. SMITH	72475	70.00	5.93	3.61	3.94	6.40	5.69	7.07	7.05	.	7.64	7.77	0.72	0.10	7.11	7.17	.
M. WATTS	53075	55.00	3.51	4.08	3.16	5.30	6.13	6.90	6.40	.	6.11	6.06	5.47	4.97	4.79	4.37	.
M. WATTS	60975	70.00	0.51	7.71	0.73	11.65	11.46	10.56	11.41	.	10.49	0.70	0.47	7.77	7.24	7.22	.
M. WATTS	51575	82.70	0.34	0.50	11.07	12.70	13.45	14.54	14.74	.	13.90	12.02	10.07	0.90	0.20	7.50	.
MEAN			5.64	0.70	7.00	6.77	6.77	6.53	6.45	.	6.55	6.03	0.75	7.06	7.07	6.03	.
SD			1.170	1.500	2.373	3.010	3.103	3.100	3.216	.	3.055	2.508	2.114	1.732	1.477	1.304	.
N			6	6	6	6	6	6	6	.	6	6	6	6	6	6	.

SUBJECT DATE REPLY

[illegible]

PLASMA AMINO ACID 181 VALINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 H.	8 HR	12 HR	24 HR
J. FLATT	52275	65.00		24.00	22.90	22.10	20.04	19.27	17.76	16.77	.	15.67	10.42	10.26	10.09	10.29	10.35	.	25.30
K. SMITH	52275	55.00		16.15	14.90	14.65	12.90	11.01	10.51	12.61	.	13.57	10.24	12.25	12.30	11.55	12.29	.	20.75
L. SMITH	72475	70.00		30.60	25.70	25.00	24.00	23.90	22.90	22.10	.	20.70	20.60	23.00	24.00	22.30	22.90	.	27.90
N. WATT	53075	55.00		17.60	18.35	16.00	17.40	16.07	15.03	14.30	.	15.30	15.60	17.11	10.22	10.24	10.40	.	23.27
R. WATKE	60975	70.00		21.20	20.37	19.00	22.30	18.02	16.01	16.54	.	16.41	15.31	16.40	16.03	17.35	17.30	.	25.43
R. WATT	51575	02.70		22.77	22.71	22.53	21.14	19.10	18.05	17.10	.	19.25	18.41	10.32	20.55	20.07	19.02	.	20.42
MEAN				22.21	23.03	20.20	19.00	18.17	16.04	16.63	.	16.04	16.44	17.57	10.45	10.10	10.10	.	24.15
SD				5.204	3.031	4.022	4.109	4.009	4.020	3.101	.	2.627	3.617	3.471	3.916	3.609	3.462	.	2.420
N				6	6	6	6	6	6	6	.	6	6	6	6	6	6	.	6

ERYTHROCYTE AMINO ACID 181 VALINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 H.	8 HR	12 HR	24 HR
J. FLATT	52275	65.00		17.92	22.25	21.35	21.41	21.11	21.70	19.23	.	16.72	15.01	17.30	17.59	15.55	17.50	.	10.42
K. SMITH	52275	55.00		11.00	7.44	10.23	9.00	9.30	12.99	13.05	.	9.01	0.14	9.60	9.10	9.51	7.52	.	12.24
L. SMITH	72475	70.00		19.70	19.30	21.10	18.70	19.00	17.70	17.20	.	18.90	17.10	10.90	17.61	17.00	10.40	.	19.00
N. WATT	53075	55.00		14.37	11.00	9.72	9.02	9.77	11.07	13.11	.	7.91	9.40	10.41	9.09	10.35	10.35	.	12.00
R. WATKE	60975	70.00		6.02	12.47	10.00	13.41	15.00	16.30	12.75	.	10.45	14.95	10.51	13.07	10.00	10.25	.	20.70
R. WATT	51575	02.70		14.60	16.09	13.12	20.43	14.13	11.03	9.09	.	10.61	10.20	10.00	10.01	10.17	10.10	.	10.31
MEAN				14.21	14.09	14.41	15.40	14.07	16.13	14.17	.	13.37	12.62	13.60	13.53	13.23	13.30	.	10.07
SD				4.610	5.552	5.403	5.413	4.765	4.210	5.442	.	4.530	3.775	3.602	3.920	3.620	4.507	.	3.500
N				6	6	6	6	6	6	6	.	6	6	6	6	6	6	.	6

PLASMA AMINO ACID 131 1/20CYSTINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00	12.04	11.35	11.06	11.31	10.96	11.01	11.16		10.21	11.17	11.48	11.07	10.97	11.24		11.35
K. SMITH	52275	55.00	11.71	12.34	12.73	12.34	11.11	10.26	10.61		11.42	10.36	10.62	10.00	9.84	9.86		9.90
L. SMITH	72475	70.00	9.30	9.39	9.82	9.37	9.91	91.92	10.10		9.21	9.72	10.36	10.60	10.40	10.70		9.20
N. WATTS	53075	55.00	9.48	9.84	9.67	9.80	9.97	8.93	8.95		8.72	8.63	8.74	8.73	10.04	9.57		9.04
R. WALKER	60975	76.00	8.31	8.22	8.46	9.61	6.64	6.42	7.29		8.20	7.26	8.07	8.25	8.00	7.05		7.54
R. WATTS	51575	82.70	10.35	10.09	11.20	11.33	10.70	10.61	10.56		10.57	10.63	10.55	11.52	11.20	11.13		11.25
MEAN			10.23	10.19	10.23	10.63	9.71	23.10	9.76		9.65	9.63	9.90	10.16	10.15	10.06		9.80
SD			1.433	1.604	1.009	1.189	1.704	33.710	1.428		1.113	1.431	1.200	1.402	0.950	1.274		1.453
N			6	6	6	6	6	6	6		6	6	6	6	6	6		6

ERYTHROCYTE AMINO ACID 131 1/20CYSTINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
J. FLATT	52775	65.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
K. SMITH	52275	55.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
L. SMITH	72475	70.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
N. WATTS	53075	55.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R. WALKER	60975	76.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R. WATTS	51575	82.70	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MEAN			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
SD			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
N			6	6	6	6	6	6	6		6	6	6	6	6	6		6

IOHA PKU DICTEASPARTANE DOSE-100 MG/KG

IOHA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

2110 THURSDAY, AUGUST 3, 1978

PLASMA AMINO ACID 100 ASPARAGINATE																			
SUBJECT	DATE	WEIGHT	TIME																
				0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A K112MA	32078	.	.	2.25	2.00	2.30	2.07	2.60	2.10	2.20	2.00	2.12	0.01	2.30	2.50	2.00	2.33	.	.
DAUFELD	32078	.	.	2.21	2.23	2.31	2.00	2.30	1.93	1.77	2.00	1.31	1.40	1.31	2.73	2.00	2.92	.	.
J DANHEM	31370	.	.	1.04	1.00	1.03	1.09	1.60	1.30	1.33	1.52	1.41	1.32	1.31	1.03	1.03	1.04	.	.
MCVAY	31370	.	.	2.31	2.14	2.05	1.92	1.94	1.70	1.73	1.52	2.23	1.03	.	.	1.10	1.44	.	.
STELTEN	11070	.	.	1.22	1.35	1.02	1.04	1.33	1.21	0.56	1.20	1.50	1.13	1.22	.	.	.	.	.
MEAN				1.97	2.00	1.90	2.06	1.99	1.66	1.54	1.57	1.71	1.14	1.56	2.32	2.01	2.13	.	.
SD				0.450	0.403	0.342	0.709	0.530	0.426	0.643	0.403	0.420	0.000	0.557	0.507	0.023	0.630	.	.
N				5	9	6	6	5	4	5	3	5	5	4	3	4	4	0	0

IOWA PKU OITIOSPARTANE DOSE-100 MC/KG

IOWA PKU STUDY AT 100 MC/KG ASPARTATE
PKU VS NORMALS

0110 10. 5. 1970

50

PLASMA AMINO ACID 131 ALANINE

SUBJECT DATE WEIGHT

TIME

0

15

30

45

60

90

120

150

180

240

300

360 MIN

7 HR

8 HR

12 HR

24 HR

A KITZMA 32978
DAUFLOOT 32978
J DAMMCM 31578
MCVAY 31578
STELTER 11678

33.00	33.30	49.40	54.30	53.90	52.40	46.10	33.10	30.20	23.30	29.10	21.00	22.74	20.03
20.20	23.30	35.24	30.10	41.23	02.13	37.13	29.02	22.40	14.71	27.02	22.13	21.01	
21.90	27.30	41.30	43.70	42.90	36.30	29.20	21.50	10.00	13.70	10.10	15.90	10.70	16.50
40.20	36.00	30.10	30.30	39.40	31.10	31.10	47.30	42.70					
36.20	30.00	39.40	61.00	60.20	31.50	41.00	32.50	34.20	29.00	3.00		42.00	32.30

MEAN
SD
N

32.00	30.20	40.00	50.00	51.03	40.00	40.01	20.03	32.42	26.35	16.73	21.51	26.00	22.30
11.431	14.310	10.470	9.605	0.150	7.064	0.390	6.331	11.027	10.752	0.943	0.070	10.940	6.703
5	5	5	5	0	4	5	3	5	5	4	3	4	4

FASTMOCTE AMINO ACID 131 ALANINE

SUBJECT DATE WEIGHT

TIME

0

15

30

45

60

90

120

150

180

240

300

360 MIN

7 HR

8 HR

12 HR

24 HR

A KITZMA 32978
DAUFLOOT 32978
J DAMMCM 31578
MCVAY 31578
STELTER 11678

20.40	30.40	30.50	37.10	32.00	40.40	43.00	35.10	33.30	32.50	27.40	25.10	21.00	23.00
21.10	22.30	24.00	26.30	27.00	34.60	36.20	31.30	30.60	23.20	24.90	21.20	19.20	
22.30	24.00	27.20	30.70	34.40	35.00	30.20	32.30	30.40	23.70	21.30	21.00	19.30	
24.30	43.90	47.30	46.60	40.50	31.70	31.70	46.30	30.60					
20.00	20.70	20.90	37.50	39.00	36.00	32.60	34.00	35.00	23.00	30.40		32.40	31.40

MEAN
SD
N

24.02	29.02	31.70	37.24	36.40	36.70	30.02	34.07	35.20	29.04	25.37	23.07	24.12	23.72
3.293	0.013	9.040	7.237	7.005	2.040	0.023	1.537	0.430	0.200	4.104	2.312	5.530	0.700
5	5	5	5	5	4	5	3	5	5	4	3	4	4

LOWA PKU DICTYASPARTAME DOSE: 100 MG/KG

LOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1973 20

PLASMA AMINO ACID 101 ARGININE

SUBJECT DATE WEIGHT

TIME 0 15 30 45 60 90 120 150 180 240 300 360 MIN 7 HR 8 HR 12 HR 24 HR

A KITZMA 32978	8.07	7.96	10.48	9.42	9.15	7.03	7.71	6.95	7.55	8.52	11.01	12.40	12.36	4.41	.	.
DAUFLEDT 32978	6.06	6.98	7.94	7.75	6.13	6.16	6.46	6.46	6.11	5.42	4.07	6.72	6.04	7.01	.	.
J DANMEN 31578	7.15	6.16	6.96	6.78	6.21	6.04	5.27	5.46	5.78	4.08	4.74	5.08	5.00	5.21	.	.
MCVAY 31578	3.08	3.08	6.11	6.44	5.21	5.17	5.17	5.07	5.13	4.02	0.24	.	0.00	0.47	.	.
STELTER 11078	0.34	0.97	0.85	7.78	7.77	7.57	6.56	6.07	6.77	6.59	0.24	.	0.00	0.47	.	.
MEAN	7.37	7.59	8.45	7.07	6.00	6.06	6.04	6.03	6.25	6.04	7.22	8.75	8.35	6.47	.	.
SD	1.166	1.198	1.378	1.066	1.561	0.996	1.005	0.806	0.948	1.550	2.990	3.090	2.835	1.969	.	.
N	5	5	5	5	5	4	5	5	5	5	4	5	4	4	.	.

LYPHOCYTE AMINO ACID 101 ARGININE

SUBJECT DATE WEIGHT

TIME 0 15 30 45 60 90 120 150 180 240 300 360 MIN 7 HR 8 HR 12 HR 24 HR

A KITZMA 32978	5.00	3.75	2.49	0.30	0.38	0.00	0.47	5.44	0.04	2.25	0.00	0.12	3.02	4.06	.	.
DAUFLEDT 32978	4.07	5.75	6.28	3.19	0.00	3.76	4.30	3.44	2.11	4.11	5.44	7.00	4.00	4.76	.	.
J DANMEN 31578	3.41	5.25	7.61	4.75	4.30	6.12	5.69	3.05	3.26	4.20	2.22	2.06	3.36	3.08	.	.
MCVAY 31578	4.50	3.03	5.00	4.03	3.36	6.12	6.12	4.00	2.55	4.26	0.70	.	1.00	1.05	.	.
STELTER 11078	1.56	2.00	1.10	0.00	1.01	1.00	0.45	4.00	4.11	0.49	0.70	.	1.00	1.05	.	.
MEAN	3.06	3.95	4.01	4.04	4.45	4.44	3.01	3.06	3.01	3.07	3.50	5.20	3.27	3.47	.	.
SD	1.420	1.507	2.713	1.001	2.011	2.317	2.001	0.301	1.364	1.003	2.478	2.324	1.023	1.021	.	.
N	5	5	5	5	5	4	5	5	5	5	4	5	4	4	.	.

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IONA PKU CITRUS-ASPARTAME DOSE-1000 MG/KG

IONA PKU STUDY AT 120 MG/KG ASPARTAME
PKU VS NORMALS

3116 (HUGO) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

PLASMA AMINO ACID ISI ASPARAGINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A	MITZMA	32970	.	4.07	5.35	6.06	6.33	6.98	5.97	4.40	7.92	4.72	5.30	5.48	5.39	2.90	2.70	.	.
DAUFELD	32970	.	4.03	5.31	6.73	6.38	4.74	4.70	4.47	4.47	3.01	4.54	3.90	3.49	5.53	2.13	4.68	.	.
J	DAMMEN	51378	.	4.82	4.91	5.53	5.59	4.34	3.47	4.04	3.01	3.87	3.38	4.03	4.21	4.52	4.35	.	.
MCVAY	51378	.	4.51	3.63	5.43	4.33	5.53	5.53	4.04	4.04	3.99	3.03	4.05	.	.	.	.	.	.
STELTER	11678	.	4.22	5.67	5.72	5.63	5.99	5.94	4.41	4.41	3.99	4.22	5.21	4.55	.	4.10	4.43	.	.
MEAN			4.49	4.90	5.71	5.65	5.32	4.54	4.27	5.24	4.24	5.59	3.87	4.30	3.50	3.90	.	.	.
SD			0.372	0.700	0.233	0.820	0.746	1.070	0.213	2.323	0.390	0.401	0.535	1.090	1.080	1.013	.	.	.
N			5	5	5	5	5	5	4	5	3	0	5	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID ISI ASPARAGINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A	MITZMA	32970	.	14.50	15.70	13.90	14.60	9.00	13.00	15.00	12.90	11.30	13.60	13.70	13.30	10.10	14.70	.	.
DAUFELD	32970	.	16.00	17.10	16.70	15.00	15.00	15.00	15.30	10.10	9.00	16.30	14.10	17.30	14.40	14.40	13.70	.	.
J	DAMMEN	51378	.	9.32	7.71	7.01	9.06	9.06	8.09	7.23	9.00	9.33	9.49	8.33	7.17	10.40	8.30	.	.
MCVAY	51378	.	13.30	15.00	11.40	10.30	15.00	15.00	11.00	11.00	23.70	13.20	11.60	.	.	.	.	.	.
STELTER	11678	.	13.50	17.40	19.30	13.44	15.66	14.46	11.24	23.70	15.00	21.70	6.20	.	24.46	12.70	.	.	.
MEAN			13.74	15.95	13.04	12.60	13.30	12.91	12.30	13.24	13.04	14.10	11.40	11.60	11.60	13.81	12.30	.	.
SD			2.031	3.294	3.523	2.007	3.270	2.040	3.073	7.630	2.007	4.024	0.000	3.040	0.540	2.705	.	.	.
N			0	0	5	5	5	5	4	5	3	0	5	4	3	4	4	0	0

100A PKU DICTEASPARTAME 005E-180 MG/KG

100A PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS MORPHALS

0116 THURSDAY, AUGUST 30, 1966

10

PLASMA AMINO ACID 181 ASPARTATE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
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A KITZMA	32978	.	0.32	0.30	1.00	7.43	0.20	0.33	0.32	0.30	0.31	0.32	0.20	0.23	0.02	0.14	.	.
DAUFELD	32978	.	0.00	1.70	1.60	1.13	1.09	1.31	1.00	1.04	1.04	1.04	1.04	1.04	0.76	0.04	.	.
J DAMEN	51378	.	0.46	0.37	0.00	0.47	0.55	0.41	0.22	0.27	0.32	0.25	0.34	0.26	0.23	0.21	.	.
MCVAV	51378	.	0.19	0.40	0.19	0.31	0.31	0.21	0.21	0.10	0.31	0.10	0.00	.	0.71	0.00	.	.
STELTER	11678	.	0.61	0.23	0.33	0.32	0.26	0.23	0.10	0.10	0.65	0.30	0.00	.	.	.	.	.
MEAN			0.49	0.63	0.80	0.53	0.38	0.37	0.37	0.28	0.33	0.40	0.20	0.32	0.10	0.32	.	.
SD			0.323	0.644	0.361	0.341	0.340	0.490	0.301	0.103	0.322	0.334	0.302	0.453	0.200	0.397	.	.
N			5	5	5	5	5	4	5	3	5	5	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID 181 ASPARTATE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
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A KITZMA	32978	.	41.70	44.30	40.90	42.70	40.90	41.50	45.90	39.10	42.70	42.50	41.60	44.70	42.20	42.00	.	.
DAUFELD	32978	.	23.50	27.70	29.50	29.70	27.00	27.20	29.60	25.50	25.50	27.40	25.00	27.20	27.30	27.70	.	.
J DAMEN	51378	.	20.20	32.90	32.10	4.00	35.20	32.20	26.00	20.10	31.20	32.30	33.00	35.30	30.10	30.40	.	.
MCVAV	51378	.	17.00	25.00	26.10	20.00	26.30	25.70	25.70	26.30	26.30	25.10	30.00	30.40	36.30	30.60	.	.
STELTER	11678	.	39.00	34.00	37.20	30.00	41.50	41.20	30.10	30.40	41.40	34.00	30.40	.	36.30	30.60	.	.
MEAN			30.66	33.50	33.16	27.64	34.34	35.52	33.22	35.20	33.42	32.26	34.72	35.73	34.22	34.07	.	.
SD			10.270	7.706	5.929	14.640	7.114	7.030	8.595	6.150	8.100	6.760	8.071	8.730	6.327	7.020	.	.
N			5	5	5	5	5	4	5	3	5	5	4	3	4	4	0	0

IOWA PKU DIET=ASPARTAME DOSE=100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0916 THURSDAY, AUGUST 3, 1978

05

PLASMA AMINO ACID ISI CITRULLINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.		1.55	1.15	1.10	0.77	0.99	0.96	0.94	0.88	1.07	1.66	1.88	2.01	1.58	1.23	.	.
DAUFLOTT	32978	.		2.52	1.94	1.54	1.39	1.29	0.86	1.23	.	1.21	1.59	1.77	2.46	1.63	2.21	.	.
J DAMMEN	31370	.		2.14	1.59	1.43	1.13	1.18	0.94	0.89	1.15	1.44	1.03	1.01	1.63	1.93	1.71	.	.
MCVAY	31370	.		2.02	1.44	1.58	1.44	1.29	.	1.46	1.89	1.89	2.22	.	.	.	.	.	.
STELTER	11676	.		2.06	2.79	1.22	1.58	0.78	1.84	1.38	1.98	2.12	2.82	2.61	.	2.37	2.47	.	.
MCAN				2.34	1.78	1.36	1.26	1.89	1.15	1.12	1.31	1.55	1.82	2.02	2.04	1.98	1.91	.	.
SD				0.587	0.631	0.198	0.328	0.216	0.462	0.246	0.526	0.447	0.288	0.398	0.426	0.309	0.341	.	.
N				5	5	5	5	0	4	5	3	5	5	4	5	4	4	0	0

ERYTHROCYTE AMINO ACID ISI CITRULLINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.		0.98	0.48	0.98	0.46	0.78	0.69	0.92	1.43	0.86	1.68	0.87	0.74	0.61	0.78	.	.
DAUFLOTT	32978	.		0.87	1.45	1.42	1.43	1.25	1.66	1.78	.	2.93	2.89	2.89	0.85	2.63	1.65	.	.
J DAMMEN	31370	.		0.93	1.56	1.18	0.77	0.69	1.06	0.98	2.13	1.85	1.41	1.54	1.88	1.22	1.48	.	.
MCVAY	31370	.		1.98	1.14	1.71	1.51	1.48	.	1.24	.	1.55	1.39	.	.	.	.	.	.
STELTER	11676	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MEAN				1.15	1.16	1.38	1.04	1.05	1.20	1.21	1.78	1.75	1.62	1.47	0.86	1.29	1.38	.	.
SD				0.581	0.485	0.336	0.311	0.377	0.598	0.411	0.405	0.936	0.326	0.568	0.131	0.712	0.461	.	.
N				4	4	4	4	4	3	4	2	4	4	3	3	3	3	0	0

PLASMA AMINO ACID 100 GLUTAMATE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	3.33	3.60	6.90	4.13	3.32	4.03	4.78	5.91	5.06	6.31	2.85	5.63	3.21	2.34	.	.
DAUFELD	32070	.	3.48	5.38	5.41	2.43	5.34	6.32	5.48	.	3.61	2.35	4.39	2.97	6.70	2.20	.	.
J DANMEN	31370	.	3.07	2.00	5.10	4.05	5.50	4.82	3.09	4.00	6.11	4.89	3.50	3.85	4.42	3.13	.	.
MCVAY	31370	.	2.87	3.19	2.25	2.14	3.33	.	3.33	.	2.90	2.17	.	.	.	.	.	.
STELTER	11070	.	6.01	2.91	3.40	5.66	4.11	8.50	1.39	3.40	3.24	1.93	2.45	.	2.30	1.43	.	.
MEAN			3.90	3.30	5.04	3.60	4.32	6.32	3.50	4.63	4.10	3.49	3.30	4.15	2.67	2.38	.	.
SD			1.234	1.022	1.717	1.431	1.056	0.760	1.554	1.220	1.212	1.703	0.047	1.355	1.527	0.000	.	.
N			5	5	6	5	5	4	5	3	5	6	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID 100 GLUTAMATE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	23.60	27.00	21.60	22.30	24.70	22.30	24.70	22.30	22.30	28.00	23.30	23.20	23.10	37.60	.	.
DAUFELD	32070	.	26.30	20.50	25.10	24.00	23.00	23.00	27.00	.	24.40	27.50	20.90	27.70	27.10	20.40	.	.
J DANMEN	31370	.	25.80	22.30	26.60	30.70	27.30	21.00	17.10	24.20	26.80	22.60	22.30	24.00	21.70	21.10	.	.
MCVAY	31370	.	47.70	19.00	25.20	10.00	19.10	.	10.40	.	23.90	10.60	.	.	.	.	.	.
STELTER	11070	.	32.20	26.00	29.70	32.00	35.60	37.00	30.40	33.50	20.70	24.20	20.90	.	30.10	20.40	.	.
MEAN			31.12	25.24	25.04	23.92	26.04	26.22	23.52	26.07	25.66	24.10	23.35	25.23	23.37	20.07	.	.
SD			9.800	4.372	2.925	5.704	6.190	7.233	9.663	5.904	2.986	3.049	3.003	2.201	3.990	6.053	.	.
N			5	6	5	6	6	4	5	3	6	6	4	3	4	4	0	0

IOHA PKU DILT=ASPARTAME DOSE=10M MG/KG

IOHA PKU STUDY AT 10M MG/KG ASPARTAME
PKU VS NORMALS

8116 THURSDAY, AUG-31-73

PLASMA AMINO ACID 191 GLUTAMINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	.	66.28	68.20	71.08	74.08	78.08	82.08	83.70	86.00	88.50	91.44	90.48	97.32	90.50	81.90	.	.
DAUFELD	32978	.	.	38.95	36.03	40.74	42.70	35.33	31.55	30.04	.	35.64	31.71	30.05	42.02	35.75	37.70	.	.
J DAMMEN	51578	.	.	60.50	67.50	63.20	61.08	54.30	53.10	46.00	45.40	46.40	47.50	50.40	01.90	37.03	03.00	.	.
MCVAY	51578	.	.	50.30	57.50	59.00	61.30	60.00	.	54.70	.	50.00	50.00	.	.	.	.	.	.
STELTER	11078	.	.	40.00	53.50	50.00	40.00	40.00	40.00	42.50	50.10	40.50	43.50	00.67	.	35.00	32.25	.	.
MEAN				56.07	56.55	56.07	57.74	53.77	48.04	46.07	45.50	40.01	46.43	51.09	50.50	51.51	40.71	.	.
SD				12.534	13.104	11.030	12.220	13.125	13.104	10.560	9.450	9.523	9.015	13.053	7.327	10.542	7.020	.	.
N				5	5	5	5	5	4	6	5	5	5	4	5	4	4	0	0

ERYTHROCYTE AMINO ACID 191 GLUTAMINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	.	64.00	69.00	58.50	57.40	61.20	56.90	63.50	51.10	55.00	60.00	66.50	59.50	47.00	60.20	.	.
DAUFELD	32978	.	.	50.40	50.20	50.20	49.40	45.40	47.70	40.00	.	47.20	15.40	43.40	40.10	44.00	44.20	.	.
J DAMMEN	51578	.	.	43.40	44.00	42.50	47.70	43.50	50.00	52.00	57.00	56.90	54.00	55.90	55.50	55.50	55.50	.	.
MCVAY	51578	.	.	73.70	60.70	76.00	60.00	65.40	.	70.50	.	62.70	57.70	.	.	.	.	.	.
STELTER	11078	.	.	32.02	30.40	27.40	20.02	35.70	29.22	24.70	30.00	20.12	59.00	0.04	.	57.92	27.04	.	.
MEAN				52.70	52.64	51.10	50.46	50.26	43.10	40.21	41.93	45.90	42.72	50.00	40.03	46.03	42.73	.	.
SD				10.495	10.703	10.357	15.205	12.520	11.095	10.410	7.050	13.010	20.401	24.010	12.030	10.050	17.100	.	.
N				6	5	6	5	6	4	5	5	5	6	4	5	4	4	0	0

PLASMA AMINO ACID ISI GLYCINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KIZMA	32978	.	34.50	35.30	30.20	33.40	33.40	20.30	30.50	26.20	20.10	25.01	20.40	26.72	20.10	24.43	.	.
DAUFLOT	32978	.	13.10	11.20	19.00	12.43	9.70	9.40	9.62	10.00	10.00	0.73	7.52	12.10	10.33	11.94	.	.
J DAMMEN	51578	.	21.40	19.90	10.40	10.60	15.30	16.70	13.00	14.10	14.10	12.00	13.70	14.00	17.60	10.20	.	.
MCVAV	51578	.	29.60	27.90	20.10	25.90	24.30	.	22.20	.	25.00	24.70	.	.	.	.	.	.
STELTER	11678	.	20.60	2.10	20.20	17.00	10.00	10.10	14.90	13.50	17.70	13.70	19.10	.	10.90	17.70	.	.
MEAN			23.05	19.30	21.00	21.03	20.14	17.62	18.20	18.07	17.00	16.90	17.00	17.07	10.35	17.37	.	.
SD			0.327	13.125	7.700	0.130	0.085	7.000	0.303	7.000	6.000	7.422	0.007	7.770	0.635	5.105	.	.
N			5	0	0	5	0	4	5	3	5	5	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID ISI GLYCINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KIZMA	32978	.	43.70	30.40	44.70	40.90	43.00	44.90	40.50	41.20	42.30	44.50	40.40	40.40	30.70	44.50	.	.
DAUFLOT	32978	.	24.10	24.00	23.00	22.50	2.20	22.00	25.00	.	22.20	23.10	21.50	32.70	24.70	20.20	.	.
J DAMMEN	51578	.	34.20	35.40	34.10	40.40	35.90	34.10	20.00	34.70	34.10	31.60	30.00	31.10	32.70	30.70	.	.
MCVAV	51578	.	41.30	45.90	47.70	46.50	46.60	.	45.00	.	42.40	40.20	.	.	32.70	30.70	.	.
STELTER	11678	.	32.40	20.40	20.50	30.00	31.40	30.20	27.40	30.40	33.00	27.20	30.10	.	30.60	34.20	.	.
MEAN			30.34	30.00	33.60	37.42	31.90	33.00	35.32	35.43	34.00	33.32	30.70	31.40	30.55	32.40	.	.
SD			0.551	11.001	10.400	10.370	17.720	0.214	11.015	0.437	0.270	0.905	7.727	0.054	7.442	10.025	.	.
N			5	0	0	0	5	4	5	3	0	0	4	3	4	4	0	0

PLASMA AMINO ACID ISI MISTIDINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	6.01	6.32	6.57	6.95	6.56	6.97	6.75	6.42	5.56	7.07	6.20	6.99	6.94	9.46	.	.
DAUFLOD	32978	.	11.21	10.65	11.06	12.21	10.46	9.59	9.31	9.44	9.44	9.66	9.02	14.24	10.32	11.39	.	.
J DAMNEN	31378	.	8.97	19.40	10.20	7.40	7.20	6.71	6.92	6.59	7.30	7.16	8.85	7.70	8.33	7.40	.	.
MCVAY	31378	.	6.66	6.21	6.42	5.95	6.60	6.00	6.31	4.81	4.93	5.25	.	.	.	.	.	.
STELTER	11678	.	6.62	7.43	7.29	6.63	6.60	6.00	5.07	4.81	5.34	4.91	6.72	.	7.10	6.62	.	.
MEAN			8.89	8.20	8.47	7.64	7.30	7.11	6.47	5.61	6.35	6.01	6.37	10.31	8.07	8.77	.	.
SD			1.909	2.175	2.434	2.583	1.865	1.677	1.730	0.905	1.646	1.694	1.220	3.464	1.330	2.083	.	.
N			5	5	5	5	5	4	5	3	5	5	4	3	4	4	8	8

EARTMACITE AMINO ACID ISI MISTIDINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	7.12	7.76	7.31	6.66	6.92	6.46	6.96	5.01	6.34	6.71	6.23	6.00	6.30	6.04	.	.
DAUFLOD	32978	.	10.10	10.00	10.40	9.55	9.27	9.55	9.55	.	9.56	8.61	8.70	9.75	8.32	8.65	.	.
J DAMNEN	31378	.	7.42	7.34	6.06	8.64	7.90	8.00	5.00	7.00	8.01	5.93	7.36	7.36	8.94	8.00	.	.
MCVAY	31378	.	5.55	6.30	7.07	8.10	9.40	5.50	5.25	.	6.02	6.07	.	.	.	.	.	.
STELTER	11678	.	7.40	5.00	5.00	5.70	5.66	5.50	6.04	8.90	8.60	7.41	8.10	.	7.10	5.02	.	.
MEAN			7.51	7.50	7.61	7.82	7.66	7.10	6.33	7.53	7.71	6.90	7.62	7.71	7.11	6.50	.	.
SD			1.643	1.617	1.771	1.616	1.604	1.690	2.267	1.574	1.583	1.177	1.095	1.697	1.072	1.300	.	.
N			5	5	5	5	5	4	5	3	6	6	4	3	4	4	8	8

PLASMA AMINO ACID 191 ISOLEUCINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	7.71	4.44	7.40	3.41	3.22	4.70	2.43	2.70	3.32	0.99	7.30	7.77	7.30	7.31	.	.
DAUFELDT	32070	.	4.70	4.27	4.20	3.03	2.30	1.03	1.42	2.21	3.15	4.00	6.02	0.12	3.94	.	.	.
J DANHEM	31370	.	5.98	5.65	2.09	2.20	3.70	1.62	1.46	1.03	4.30	2.47	3.02	2.09	3.45	3.21	.	.
MCVAY	31370	.	10.00	9.40	0.70	7.00	4.52	7.20	7.20	0.30	7.04	.	.	.	.	.	.	.
STELTER	11070	.	6.63	6.43	6.70	3.34	0.17	0.43	4.50	3.00	4.90	4.23	5.97	.	0.50	5.91	.	.
MEAN			7.02	6.04	6.01	4.63	3.01	3.39	3.41	2.02	4.33	4.70	5.11	5.49	5.30	5.50	.	.
SD			1.901	2.079	2.407	2.050	1.000	1.033	2.407	1.016	1.663	2.130	1.943	2.301	1.617	1.717	.	.
N			5	5	5	0	0	4	5	3	5	5	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID 191 ISOLEUCINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	6.10	3.92	3.30	2.63	1.94	1.66	2.13	2.02	2.30	2.97	3.34	3.95	3.40	4.00	.	.
DAUFELDT	32070	.	12.60	6.05	3.35	4.72	1.05	0.10	0.32	.	2.21	2.29	2.93	3.07	3.45	3.71	.	.
J DANHEM	31370	.	2.50	2.97	2.17	1.29	1.15	3.01	0.90	1.52	2.11	1.05	2.40	2.34	2.40	2.25	.	.
MCVAY	31370	.	3.40	4.30	4.22	3.00	3.40	.	3.14	.	3.27	3.30	.	.	.	.	.	.
STELTER	11070	.	2.02	3.00	2.30	2.14	2.74	3.70	2.52	3.02	3.60	2.42	2.65	.	2.74	2.41	.	.
MEAN			5.35	4.22	3.00	2.93	2.19	3.60	1.65	2.45	2.70	2.57	2.03	3.32	3.32	3.00	.	.
SD			4.344	1.507	0.027	1.370	0.922	1.011	1.090	1.210	0.600	0.573	0.403	0.000	1.305	0.007	.	.
N			5	0	0	0	0	4	0	3	0	0	4	3	4	4	0	0

IOWA PKU DIET-ASPARTAME DOSE-100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0116 THURSDAY, AUGUST 3, 1973

PLASMA AMINO ACID-101 LEUCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	.	11.40	9.03	10.00	8.00	6.02	6.40	4.75	5.15	6.03	9.05	11.10	12.54	12.15	12.10	.	.
DAUFELD	32978	.	.	10.24	9.35	9.34	9.22	5.05	4.35	3.73	.	4.99	6.05	8.73	12.36	10.40	12.41	.	.
J DANMEN	51578	.	.	9.05	9.41	7.40	6.02	5.00	4.44	4.07	5.04	7.37	6.04	8.35	7.70	9.32	8.44	.	.
MCVAY	51578	.	.	11.00	11.40	10.90	9.00	8.20	.	6.00	.	.	6.30	.	.	.	.	.	.
STELTER	11078	.	.	10.50	10.90	10.50	8.25	7.04	7.07	6.00	5.05	7.01	7.72	11.20	.	10.00	11.40	.	.
MEAN				10.70	10.10	9.64	8.74	6.90	5.05	5.25	5.35	6.04	7.71	9.06	10.07	10.70	11.11	.	.
SD				0.015	0.923	1.343	1.167	1.130	1.639	1.400	0.439	1.133	1.003	1.532	2.744	1.133	1.033	.	.
N				5	5	5	5	5	4	5	3	6	5	4	3	4	4	0	2

ERYTHROCYTE AMINO ACID-101 LEUCINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32978	.	.	8.20	8.37	8.74	3.02	5.00	3.40	3.00	3.74	4.50	6.20	7.05	7.71	7.71	8.02	.	.
DAUFELD	32978	.	.	9.42	8.62	7.20	6.43	3.06	2.90	2.60	.	4.00	5.76	6.77	8.64	8.20	8.20	.	.
J DANMEN	51578	.	.	6.01	7.60	6.02	5.01	4.45	3.65	3.35	4.45	5.07	5.34	6.50	6.43	6.77	6.60	.	.
MCVAY	51578	.	.	6.22	6.01	6.19	7.06	6.09	.	4.97	.	.	6.00	.	.	.	.	.	.
STELTER	11078	.	.	6.74	6.00	5.96	4.40	4.20	6.06	4.14	4.00	4.90	4.94	4.90	.	5.04	5.36	.	.
MEAN				7.40	7.92	6.82	6.54	4.73	3.76	3.00	4.33	5.07	5.60	6.32	7.50	7.00	7.20	.	.
SD				1.322	0.753	0.923	1.365	0.603	0.900	0.850	0.540	0.824	0.545	0.924	1.110	1.140	1.573	.	.
N				5	5	5	5	5	4	5	3	6	5	4	3	4	4	0	0

OWA PKU DIET-ASPARTAME DOSE-100 MG/KG

IOWA PKU STUDY AT 182 MG/KG ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1973

LASMA AMINO ACID 181 METHIONINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
KITZMA	32978	.	.	4.37	2.76	4.06	3.04	2.03	3.40	2.28	2.23	2.41	4.43	4.01	3.68	3.72	3.34	.	.
AUFLOD	32978	.	.	2.23	1.09	2.09	2.24	1.68	1.34	1.30	.	1.30	1.91	1.38	2.34	1.07	2.09	.	.
DANNEN	51578	.	.	.37	2.03	2.07	2.70	1.21	2.17	2.32	2.50	1.39	1.94	2.63	2.02	2.72	2.68	.	.
CAVAY	51578	.	.	.33	3.28	3.11	3.12	2.03	.	2.30	.	2.40	2.42	2.40	.	3.00	2.13	.	.
TELTER	11678	.	.	3.33	2.06	2.32	3.10	2.20	3.02	1.93	1.37	1.66	1.02	2.40	.	.	.	.	.
EAM	.	.	.	3.11	2.54	3.07	2.06	2.17	2.33	2.03	2.10	1.90	2.43	2.62	2.00	2.03	2.61	.	.
D	.	.	.	0.901	0.326	1.133	0.391	0.730	0.866	0.406	0.478	0.507	1.177	1.000	0.707	0.772	0.676	.	.
				5	5	5	5	6	4	5	3	6	5	4	3	4	4	0	0

RTIMOCYTE AMINO ACID 181 METHIONINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
KITZMA	32978	.	.	1.90	1.03	1.30	1.34	1.32	1.14	1.14	0.92	1.12	1.07	1.37	1.23	1.11	1.00	.	.
AUFLOD	32978	.	.	2.94	1.93	1.72	1.60	1.12	2.00	2.03	.	1.29	1.12	1.03	1.34	1.33	1.62	.	.
DANNEN	51578	.	.	1.40	1.63	1.68	1.31	1.33	1.10	1.11	1.16	1.10	1.13	1.30	1.37	1.33	1.31	.	.
CAVAY	51578	.	.	1.50	2.39	2.33	2.33	1.00	1.74	1.78	1.12	1.92	1.80	.	.	0.00	0.23	.	.
TELTER	11678	.	.	2.00	1.16	1.70	1.61	0.60	1.74	1.00	1.12	1.00	0.02	0.00	.	0.00	0.23	.	.
EAM	.	.	.	2.00	1.70	1.76	1.00	1.26	1.33	1.37	1.07	1.30	1.10	1.13	1.33	1.13	1.07	.	.
D	.	.	.	0.394	0.440	0.344	0.300	0.463	0.453	0.767	0.120	0.300	0.353	0.263	0.040	0.236	0.007	.	.
				5	6	6	6	6	4	6	3	5	6	4	3	4	4	0	0

100A PKU DIET=ASPARTAME DOSE=100 MG/KG

100A PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

0816 THURSDAY, AUGUST 31, 1973

PLASMA AMINO ACID 181 ORNITHINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
1	KITZMA	32978	.	6.34	6.42	6.22	6.30	6.33	6.39	6.09	6.27	5.95	6.59	7.18	7.97	8.47	8.74	.	.
1	HAUFELDT	32978	.	3.20	3.26	3.76	3.64	3.15	3.31	3.28	.	3.61	3.22	2.78	3.54	2.73	3.14	.	.
1	DANNCN	51378	.	3.67	4.84	4.26	3.37	3.53	3.20	3.25	3.20	3.43	3.06	3.55	2.85	3.88	2.65	.	.
1	ICVAY	51378	.	4.43	3.93	3.66	3.44	3.68	.	3.13	.	3.10	3.23	.	.	.	.	.	.
1	HELTEN	11678	.	5.48	6.47	6.28	5.71	5.73	5.74	4.45	4.50	5.73	4.34	5.10	.	6.14	4.58	.	.
1	TEAM			4.62	4.83	4.88	4.53	4.48	4.56	3.98	4.66	4.26	4.80	4.67	4.79	8.11	4.76	.	.
1	ID			1.290	1.565	1.268	1.373	1.448	1.526	1.107	1.511	1.432	1.489	1.908	2.778	2.714	2.768	.	.
				5	5	5	5	5	4	5	3	5	5	4	5	4	4	5	5

ERYTHROCYTE AMINO ACID 181 ORNITHINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
1	KITZMA	32978	.	13.08	14.58	13.38	14.18	13.38	12.98	12.88	10.68	11.88	13.58	11.58	10.38	11.78	11.18	.	.
1	HAUFELDT	32978	.	9.98	9.68	10.78	10.84	9.64	9.63	9.86	.	7.44	9.23	7.99	8.44	7.68	8.48	.	.
1	DANNCN	51378	.	7.67	8.64	8.22	11.38	10.48	8.53	6.24	7.48	10.38	7.68	7.23	8.06	8.18	5.85	.	.
1	ICVAY	51378	.	7.27	10.28	11.48	11.78	13.98	.	7.69	.	9.26	8.18	.	.	.	.	.	.
1	HELTEN	11678	.	16.88	14.98	15.98	14.68	16.48	10.88	10.18	14.48	14.88	14.98	12.18	.	13.18	11.88	.	.
1	TEAM			10.94	11.58	11.98	12.34	12.68	11.76	10.94	10.88	10.58	10.57	8.78	8.28	9.64	9.11	.	.
1	ID			3.980	2.983	2.881	1.948	2.833	3.378	4.785	3.584	2.483	3.434	2.451	0.975	3.284	2.486	.	.
				5	5	5	5	5	4	5	3	5	5	4	5	4	4	5	5

PLASMA AMINO ACID 191 PHENYLALANINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32970	.	7.43	13.58	42.58	43.88	42.88	43.18	48.88	38.58	27.78	19.12	17.01	13.25	18.00	9.21	.	.
DAUFELD	32970	.	5.99	21.76	33.25	26.26	24.57	41.86	25.84	27.88	28.43	14.47	9.24	18.65	7.04	7.86	.	.
J DANMEN	51378	.	6.74	19.38	44.88	41.88	41.28	40.98	33.88	27.88	23.48	14.88	14.48	18.88	18.48	8.92	.	.
PCVAY	51378	.	7.67	26.18	23.78	23.38	32.18	30.78	31.48	23.88	27.88	28.88	28.88	15.48	.	12.28	18.38	.
STELTER	11878	.	7.71	28.28	36.18	39.38	42.18	38.78	28.38	23.88	16.88	15.48	.	.	.	.	.	.
MEAN			7.11	20.61	36.47	35.18	36.55	41.68	32.87	27.18	24.43	17.28	14.16	11.57	18.53	9.88	.	.
SD			8.736	5.228	7.628	8.884	7.881	8.353	5.311	3.351	3.158	2.739	3.548	1.488	1.728	2.895	.	.
N			5	5	5	5	5	4	5	3	5	5	4	3	4	4	8	8

ERYTHROCYTE AMINO ACID 191 PHENYLALANINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32970	.	6.65	14.88	37.18	35.58	33.68	38.38	33.58	23.58	22.28	15.58	13.78	8.72	8.85	7.13	.	.
DAUFELD	32970	.	4.36	28.88	27.88	28.98	18.18	31.48	28.88	28.78	17.68	13.88	7.48	8.32	6.08	5.48	.	.
J DANMEN	51378	.	5.88	18.88	37.38	42.48	37.78	37.58	28.78	26.78	2.83	13.48	11.68	9.58	7.88	7.51	.	.
PCVAY	51378	.	5.37	23.98	22.68	22.18	25.98	28.38	28.38	19.78	22.88	18.88	11.88	.	.	.	.	.
STELTER	11878	.	4.78	15.78	28.38	38.18	28.58	28.98	26.18	18.78	17.48	11.88	9.18	.	7.68	5.65	.	.
MEAN			5.23	18.64	38.86	38.28	28.98	33.77	27.48	23.38	18.25	13.78	10.45	8.85	7.61	6.42	.	.
SD			6.888	3.954	8.381	8.878	7.588	3.883	4.888	3.584	8.274	2.823	2.788	8.888	8.387	1.883	.	.
N			8	8	8	5	8	4	5	3	5	5	4	3	4	4	8	8

PLASMA AMINO ACID ISI PROLINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A K172MA	32970	13.20	10.50	21.00	22.40	21.50	20.00	10.00	14.40	15.40	12.40	13.72	12.77	12.04	11.27			
DAUFELD	32970	0.07	11.10	13.30	12.93	12.10	13.90	11.23		0.07	0.31	7.33	10.20	0.02	0.50			
J DAMMEN	01370	13.70	15.50	10.00	17.70	16.00	15.40	13.60	12.70	12.20	10.10	11.90	11.00	12.20	11.20			
MCVAY	01370	24.00	25.00	20.00	26.00	26.90	23.00	23.00	22.50	22.00	21.10	24.10						
STELTER	11070	25.20	31.10	32.70	32.50	33.60	29.00	17.00	16.53	16.55	14.31	14.26	11.35	12.21	13.32			
MEAN		17.30	20.00	22.54	22.31	22.19	10.00	16.73	16.53	16.53	14.31	14.26	11.35	12.21	13.32			
SD		0.904	0.194	7.441	7.020	0.404	7.145	4.53	0.237	5.002	5.720	7.000	1.201	5.043	0.120			
N		5	5	5	5	5	4	5	3	5	5	4	3	4	4			

ERYTHROCYTE AMINO ACID ISI PROLINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A K172MA	32970	13.40	10.10	14.50	17.00	16.20	10.50	17.00	14.60	14.30	14.50	12.43	12.00	11.70	12.00			
DAUFELD	32970	0.01	0.03	11.20	11.10	0.73	11.00	11.00	11.00	11.10	0.24	0.15	0.94	7.79	0.11			
J DAMMEN	01370	10.40	10.70	11.10	14.60	13.00	12.50	10.50	12.40	10.50	0.00	0.11	0.00	0.12	0.50			
MCVAY	01370	11.40	10.50	20.40	19.40	19.50	20.70	20.70	17.70	17.20	14.40	15.10						
STELTER	11070	20.40	17.70	20.60	21.20	23.70	22.10	10.10	17.70	10.00	10.00	15.10						
MEAN		13.04	14.61	16.70	16.60	16.43	13.62	15.50	14.00	14.40	11.22	11.44	10.37	10.40	10.72			
SD		4.331	4.531	6.673	3.001	0.454	4.020	4.305	2.663	3.601	3.011	2.006	1.097	2.004	2.700			
N		5	5	5	5	5	4	5	3	5	5	4	3	4	4			

PLASMA AMINO ACID ISI SERINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	.	12.60	13.00	14.60	15.60	15.10	13.00	12.50	17.30	12.50	11.60	12.20	11.37	17.74	9.71	.	.
DAUFELDT	32070	.	.	10.13	10.69	11.40	11.07	9.76	9.00	9.04	.	8.91	8.37	8.41	10.40	8.71	9.55	.	.
J DAMMEN	31370	.	.	8.07	8.70	9.53	9.25	8.60	7.20	6.60	6.90	7.53	6.70	8.11	7.22	8.62	8.15	.	.
MCVAY	31370	.	.	11.90	13.30	12.70	12.20	12.10	.	10.40	13.30	11.00	11.60	10.20	.	15.70	15.20	.	.
STELTER	11070	.	.	13.70	10.30	10.20	13.50	17.30	17.00	14.40	10.30	17.00	12.70	10.20	.	.	.	.	.
MEAN				11.84	12.00	13.20	12.44	12.46	11.79	10.60	10.03	11.50	10.23	11.25	9.60	18.00	10.70	.	.
SD				2.609	3.634	3.312	2.342	3.701	4.107	2.000	3.443	4.017	2.522	3.507	2.101	3.000	2.074	.	.
N				5	5	5	5	5	4	5	5	5	5	4	5	4	4	0	0

ERYTHROCYTE AMINO ACID ISI SERINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A KITZMA	32070	.	.	16.20	17.10	15.60	10.70	14.70	14.70	13.70	13.50	11.90	14.20	14.10	10.00	13.70	14.70	.	.
DAUFELDT	32070	.	.	13.40	13.60	13.30	11.00	12.40	11.30	13.30	.	11.00	12.00	12.20	12.70	11.40	11.20	.	.
J DAMMEN	31370	.	.	11.20	11.40	11.00	14.30	12.70	9.01	10.00	12.70	9.30	10.10	11.70	11.70	11.30	10.90	.	.
MCVAY	31370	.	.	14.50	12.20	12.30	11.50	11.20	.	11.10	.	10.50	9.20	.	.	.	.	.	.
STELTER	11070	.	.	19.00	10.10	13.00	14.70	19.10	10.00	14.00	10.00	19.20	10.50	10.30	.	10.50	20.40	.	.
MEAN				14.90	14.00	13.00	14.20	13.22	12.95	12.02	14.07	12.57	12.56	14.00	14.13	13.07	14.30	.	.
SD				3.150	2.437	1.713	2.897	1.650	2.004	2.202	1.721	3.035	2.904	2.000	3.300	3.373	4.417	.	.
N				5	5	5	0	0	4	5	5	0	0	4	5	4	4	0	0

ASMA AMINO ACID 131 TAURINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
KITZMA	32970	•	3.61	4.78	5.13	5.93	4.74	4.98	5.77	5.18	5.26	6.75	4.64	4.92	4.91	4.33	•	•
JELEOT	32970	•	3.61	2.73	3.54	3.52	3.66	3.05	4.66	3.25	2.60	3.63	2.60	3.74	2.63	2.97	•	•
DANWEN	31370	•	6.25	3.60	2.80	3.97	3.25	3.11	2.47	3.25	3.75	2.80	3.31	2.70	3.62	3.15	•	•
WAV	31370	•	4.95	5.24	4.47	4.91	3.82	4.29	4.29	5.61	4.34	4.65	6.30	•	3.75	3.68	•	•
ELTER	11670	•	10.98	6.69	7.29	6.55	6.52	6.02	5.75	5.61	5.09	5.25	6.30	•	3.75	3.68	•	•
AM			6.30	4.49	4.67	4.80	4.28	4.62	4.46	4.67	4.42	4.39	4.28	3.68	3.98	4.03	•	•
			2.723	1.643	1.701	1.100	1.413	1.647	1.377	1.251	1.193	1.620	1.537	0.872	1.472	1.253	•	•
			5	5	5	5	0	4	5	5	5	5	4	5	4	4	•	•

FIBROCYTE AMINO ACID 131 TAURINE

SUBJECT	DATE	WEIGHT	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
KITZMA	32970	•	11.38	34.38	18.28	10.18	10.20	7.32	6.08	3.81	7.19	28.98	7.93	6.14	7.77	124.28	•	•
JELEOT	32970	•	8.12	13.88	3.56	3.82	2.25	3.10	0.71	•	3.14	4.68	2.75	5.39	3.36	3.20	•	•
DANWEN	31370	•	44.08	14.20	40.80	50.38	50.10	9.50	18.58	25.20	44.38	6.56	2.47	3.33	3.42	6.21	•	•
WAV	31370	•	11.68	16.68	68.50	6.47	14.68	•	3.76	•	3.94	4.45	•	•	•	•	•	•
ELTER	11670	•	7.34	3.88	2.54	4.98	8.34	4.22	5.08	8.08	6.82	7.82	6.08	•	4.68	3.78	•	•
AM			16.35	16.42	25.32	15.98	16.38	6.86	6.81	12.34	12.92	8.88	4.34	4.55	4.64	23.88	•	•
			13.553	11.878	27.649	22.708	19.381	2.035	2.143	11.538	17.617	6.863	2.538	1.455	2.188	58.188	•	•
			5	5	5	5	5	4	5	5	5	5	4	5	4	4	•	•

ICMA PRU DITICASPARTAME DONTICMA MG/KC

ICMA PRU STUDY AT 100 MG/KC ASPARTAME
PRU VS NORMALS

3110 THU0300, AUGUST 3, 1970

PLASMA AMINO ACID 181 THREONINE

SUBJECT	D/YE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A	1172MA	32070	.	12.70	11.00	13.00	13.00	14.70	12.70	11.30	10.10	10.30	0.03	11.73	0.20	0.01	0.43	.	.
DAUPFLDT	32070	.	22.35	21.10	22.07	23.42	20.70	10.01	17.30	16.31	14.05	13.00	10.32	10.40	16.70	.	.	.	.
J	0044CM	31370	.	21.10	21.40	21.00	21.40	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
MCVAV	31370	.	22.10	19.00	23.20	27.40	21.30	20.10	17.00	15.70	17.10	14.30	17.30	.	10.00	15.10	.	.	.
STELTEN	11070	.	20.30	24.00	23.40	21.00	21.70	20.10	17.00	15.70	17.10	14.30	17.30	.	10.00	15.10	.	.	.
MEAN			10.71	20.00	20.00	21.20	10.32	17.72	10.00	12.32	12.32	12.32	12.32	12.32	12.32	12.32	12.32	12.32	12.32
SD			4.003	3.762	4.431	3.011	2.097	3.712	2.000	3.007	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
N			5	5	5	5	5	5	4	5	5	5	5	4	5	4	4	4	4

ERYTHROCYTE AMINO ACID 181 THREONINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
A	1172MA	32070	.	11.30	11.00	10.40	11.30	10.00	10.30	0.02	0.37	0.03	0.47	0.74	12.00	0.37	0.00	.	.
DAUPFLDT	32070	.	10.30	10.20	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
J	0044CM	31370	.	10.30	17.30	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
MCVAV	31370	.	2.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
STELTEN	11070	.	17.10	13.00	10.00	17.30	17.00	17.10	14.40	14.00	10.00	11.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
MEAN			13.43	15.02	15.02	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32
SD			4.050	2.432	3.004	3.110	2.037	2.004	2.321	3.020	2.047	1.730	2.300	0.003	0.003	0.423	2.133	.	.
N			5	5	5	5	5	4	5	5	5	5	5	4	5	4	4	4	4

MA PKU DIET-ASPARTAME DOSE-100 MG/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

8116 THURSDAY, AUGUST 3, 1978 44

ASMA AMINO ACID 150 TRYPTOPHAN

OBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
UPELOT	12078	.		4.00	5.00	5.43	4.28	4.70	4.63	5.04	4.00	5.50	5.39	4.11	5.24	5.00	5.00	.	.
DAMEN	51578	.		6.00	6.53	5.91	5.23	3.02	4.23	4.16	4.00	4.46	4.17	4.53	3.77	4.46	3.92	.	.
VAV	51570	.		4.00	3.41	3.41	2.06	2.54	.	3.09	.	3.63	2.91	.	.	.	.	.	.
AN				5.05	5.01	4.92	4.12	3.72	4.43	4.10	4.00	4.56	4.10	4.32	4.50	4.74	4.00	.	.
				0.097	1.561	1.331	1.193	1.120	0.203	0.977	1	0.084	1.240	0.207	1.030	0.403	1.245	.	.
				3	3	3	3	3	2	3	1	3	3	2	2	2	2	0	0

550

IOWA PKU DIET-ASPARTAME DOSE-1000 MC/KG

IOWA PKU STUDY AT 100 MG/KG ASPARTAME
PKU VS NORMALS

3115 INUSCANT, AUGUST 3, 1973

PLASMA AMINO ACID IS1 TYROSINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	9 HR	12 HR	24 HR
A RITZMA	32970	.		4.70	4.08	5.32	5.02	6.27	0.48	0.16	0.20	0.60	3.43	0.30	7.00	0.53	0.46	.	.
DAUFLOD	32970	.		3.10	3.34	4.02	4.23	4.10	4.50	4.56	.	4.74	4.40	3.77	0.01	3.02	3.77	.	.
J DANHEM	31370	.		2.92	2.90	3.20	3.34	3.61	4.21	4.16	4.37	4.00	3.70	4.07	3.33	3.00	3.19	.	.
MCVAY	31370	.		3.03	6.13	3.03	6.31	6.06	.	7.66	.	0.50	0.93	.	.	.	.	.	.
STELTER	11070	.		6.30	5.30	7.33	7.01	0.02	0.00	0.30	7.73	0.20	7.13	0.02	.	7.50	0.03	.	.
MEAN				4.02	4.54	4.00	0.32	0.75	0.00	0.17	0.00	7.00	0.54	0.24	0.34	0.00	4.00	.	.
SD				1.345	1.331	1.764	1.630	1.023	2.210	1.791	2.002	2.040	2.334	2.000	2.100	1.900	1.013	.	.
P				3	3	3	3	0	4	0	3	3	3	4	3	4	4	0	0

ERYTHROCYTE AMINO ACID IS1 TYROSINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 HR	9 HR	12 HR	24 HR
A RITZMA	32970	.		3.15	3.40	3.43	5.00	5.53	4.00	0.19	7.53	0.53	0.50	0.04	3.05	3.00	3.07	.	.
DAUFLOD	32970	.		2.93	3.74	3.05	4.10	4.09	3.90	4.47	.	5.41	3.00	3.30	4.00	4.00	2.97	.	.
J DANHEM	31370	.		2.70	3.40	3.50	4.43	3.94	4.47	4.19	5.39	0.27	4.70	4.40	4.12	3.40	3.53	.	.
MCVAY	31370	.		0.04	3.03	6.30	6.32	6.92	.	0.03	.	0.20	0.43	.	.	.	.	.	.
STELTER	11070	.		4.00	4.30	4.14	5.30	4.70	6.50	6.20	7.20	6.04	5.64	5.70	.	3.10	2.05	.	.
MEAN				4.20	4.50	4.00	0.24	5.00	4.97	0.23	0.71	0.02	0.40	3.30	4.00	4.11	3.00	.	.
SD				1.400	1.003	1.104	0.010	1.021	1.131	1.004	1.132	1.334	1.034	2.012	0.000	1.211	1.021	.	.
P				3	0	0	3	0	4	3	3	0	0	4	3	4	4	0	0

ICMA PKU DILEASPARTAME DOSE: 120 MG/KG

ICMA PKU STUDY AT 100-1000 ASPARTAME
PKU VS NORMALS

0110 THURSDAY, AUGUST 3, 1973

PLASMA AMINO ACID ISI VALINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	00	02	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
1	MITZMA	32970	.	23.00	22.90	21.30	22.30	21.40	17.10	17.50	16.00	17.30	16.43	21.03	22.07	22.25	18.90	.	.
2	DAUFLOT	32970	.	21.37	20.17	21.47	21.53	17.51	13.31	14.13	.	13.70	14.44	15.34	20.22	17.43	19.02	.	.
3	100MMEN	31370	.	17.20	16.00	14.10	13.70	13.40	12.50	11.00	12.00	14.30	13.48	16.50	14.20	16.57	13.70	.	.
4	CEVAY	31370	.	21.40	21.20	20.40	18.70	10.00	.	10.70	10.10	17.90	10.20	.	.	15.00	20.30	.	.
5	STELTER	11070	.	23.00	23.60	23.10	10.10	21.70	21.00	10.00	10.10	14.30	17.50	23.20	.	15.00	20.30	.	.
6	CEAN	.	.	21.41	21.20	20.07	19.27	10.52	16.03	15.75	15.00	15.30	16.30	12.07	10.03	17.53	18.00	.	.
7	10	.	.	2.573	3.333	3.210	2.600	3.370	3.010	2.733	2.702	1.000	2.314	3.650	4.115	1.000	2.002	.	.

ANTHROCTIC AMINO ACID ISI VALINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	00	02	120	150	180	240	300	360 MIN	7 HR	8 HR	12 HR	24 HR
1	MITZMA	32970	.	17.40	18.00	16.00	16.00	16.70	13.70	13.50	12.00	10.30	10.90	16.40	17.70	15.00	17.10	.	.
2	DAUFLOT	32970	.	21.70	17.30	16.00	14.70	13.10	10.20	10.70	.	12.00	13.40	14.70	15.70	14.00	13.00	.	.
3	100MMEN	31370	.	10.00	12.30	10.90	11.10	9.03	0.13	0.20	10.50	10.20	9.50	10.10	10.00	9.05	10.00	.	.
4	CEVAY	31370	.	10.40	10.30	10.90	15.30	14.30	13.40	13.40	11.40	11.00	13.00	11.00	.	13.40	11.40	.	.
5	STELTER	11070	.	3.30	14.40	16.20	13.50	10.00	12.00	14.00	11.40	11.00	13.20	11.00	.	13.40	11.40	.	.
6	CEAN	.	.	13.00	13.02	13.32	14.00	13.90	12.01	12.10	11.50	11.52	13.02	13.20	14.47	13.31	13.27	.	.
7	10	.	.	6.440	2.535	2.405	2.143	2.710	2.926	2.072	1.034	1.441	2.742	2.007	3.095	2.002	2.001	.	.

10MA PKU DIET-ASPARTAME DOSE=1MM MG/KG

10MA PKU STUDY AT 1CM MG/KG ASPARTAME
PKU VS NORMALS

0116 THURSDAY, AUGUST 3, 1976

PLASMA AMINO ACID IS: 1/20CYSTINE

SUBJECT	DATE	WEIGHT	TIME	0	15	30	45	60	90	120	150	180	240	300	360 MIN	7 "	8 HR	12 HR	24 HR
A	1172MA	32070	.	1.00	10.30	10.70	11.00	12.70	10.70	10.00	10.10	10.30	9.01	10.07	12.27	11.12	9.10	.	.
DAUFELD	32070	.	9.70	9.45	10.61	10.64	10.77	10.07	9.03	9.03	9.03	8.93	7.70	8.07	9.34	8.32	8.70	.	.
J	DAMMEN	51570	.	7.32	7.13	7.20	8.01	6.50	6.43	6.00	6.50	5.04	5.07	6.70	5.90	6.04	7.24	.	.
MCVAY	51570	.	8.70	8.00	7.03	7.15	7.90	8.62	8.62	8.00	8.00	8.02	8.00	8.55	.	0.10	0.27	.	.
STELTER	11670	.	8.52	9.62	9.03	5.01	9.51	9.73	9.30	9.00	4.03	7.45	9.55	.	.	0.10	0.27	.	.
MEAN			7.00	9.10	9.25	8.30	9.40	9.23	8.74	8.56	7.70	7.00	8.77	9.20	9.03	8.54	.	.	.
SD			3.51E	1.100	1.503	2.064	2.222	1.011	1.773	1.703	2.415	1.470	1.700	3.142	1.401	0.002	.	.	.
N			8	5	8	8	8	4	5	3	8	8	4	4	3	4	4	8	8

TABLE III

ESTIMATE OF ASPARTAME INTAKE IN THE 70 KG MAN

Caloric Requirement 2500 cal/day

SUCROSE INTAKE (17% of calories)

<u>CALORIES</u>	<u>SUCROSE</u>	<u>SUCROSE INTAKE</u>	<u>ASPARTAME EQUIVALENT</u>
425	104 gms	1500 mg/kg	7.5 - 8.5 mg/kg

TOTAL CARBOHYDRATE INTAKE (50% of calories)

<u>CALORIES</u>	<u>SUCROSE</u>	<u>SUCROSE EQUIVALENT</u>	<u>ASPARTAME EQUIVALENT</u>
1250	313 gms	4470 mg/kg	22 - 25 mg/kg

TABLE IV
PLASMA PHENYLALANINE LEVELS UNDER VARIOUS CONDITIONS

	<u>UMOL/DL</u>	<u>MG%</u>
<u>NORMAL SUBJECTS</u>		
FASTING	6 ± 3	1 ± 0.5
POSTPRANDIAL	12 ± 3	2 ± 0.5
<u>PHENYLALANINEMIA</u>		
CLASSICAL PKU	120 - 600	20 - 100
QUESTIONABLE VARIANTS	60 - 120	10 - 20
BENIGN VARIANTS	24 - 48	4 - 8
<u>AFTER ASPARTAME LOADING AT 34 MG/KG</u>		
NORMAL SUBJECTS	11 ± 3	1.8 ± 0.5
PKU HETEROZYGOTES	16.0 ± 2.3	2.6 ± 0.3

TABLE V

PEAK PLASMA PHENYLALANINE LEVELS IN NORMAL SUBJECTS AND SUBJECTS
HETEROZYGOUS FOR PHENYLKETONURIA AFTER GRADED DOSES OF ASPARTAME

<u>ASPARTAME DOSE</u> MG/KG BODY WT.	<u>PEAK PLASMA PHENYLALANINE LEVELS (umoles/dl)</u>	
	NORMAL SUBJECTS	HETEROZYGOUS SUBJECTS
0	5.66 \pm 1.21	6.73 \pm 0.98
34	11.1 \pm 2.49	16.0 \pm 2.27
50	16.2 \pm 4.86	----
100	20.2 \pm 6.77	41.7 \pm 2.35
150	28.6 \pm 8.77	----
200	48.1 \pm 15.5	----

TEST PROCEDURE

ERROR CLASS VARIABLE DOES NOT HAVE 2 LEVELS.

AMINOACAMINOBUTYRATE BLOOD=PLASMA

VARIABLE PL31 8 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.72933333	0.5319791	0.21715456	1.06630000	2.38000000	UNEQUAL	-0.0651	9.0	0.4773
ICMA PKU	6	1.36620000	0.45377407	0.20302036	1.22030000	2.31000000	EQUAL	-0.0510	9.0	0.4164
FOR H01 VARIANCES ARE EQUAL, F= 1.36 WITH 5 AND 4 DF PROB > F= 0.7072										

VARIABLE PL32 15 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.72933333	0.41607726	0.17018944	1.10000000	2.19000000	UNEQUAL	-0.0795	7.0	0.3553
ICMA PKU	6	1.09600000	0.40257487	0.22026618	1.35000000	2.60000000	EQUAL	-0.0908	9.0	0.3453
FOR H01 VARIANCES ARE EQUAL, F= 1.40 WITH 4 AND 5 DF PROB > F= 0.7113										

VARIABLE PL33 30 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.72500000	0.52052858	0.21250490	0.99000000	2.31000000	UNEQUAL	-0.0669	9.0	0.4893
ICMA PKU	6	1.08200000	0.34215494	0.13901634	1.62000000	2.31000000	EQUAL	-0.0329	9.0	0.4264
FOR H01 VARIANCES ARE EQUAL, F= 2.31 WITH 5 AND 4 DF PROB > F= 0.4364										

VARIABLE PL34 45 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.71666667	0.50401038	0.20376146	0.94000000	2.23000000	UNEQUAL	-0.0193	7.1	0.3083
ICMA PKU	6	2.06400000	0.70061132	0.21690002	1.64000000	2.80000000	EQUAL	-0.0504	9.0	0.3608
FOR H01 VARIANCES ARE EQUAL, F= 1.90 WITH 4 AND 5 DF PROB > F= 0.4729										

VARIABLE PL35 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.71166667	0.42500348	0.17386617	1.13000000	2.11000000	UNEQUAL	-0.0505	7.6	0.3712
ICMA PKU	6	1.09400000	0.53649791	0.24002350	1.33000000	2.60000000	EQUAL	-0.0732	9.0	0.3560
FOR H01 VARIANCES ARE EQUAL, F= 1.08 WITH 4 AND 5 DF PROB > F= 0.6129										

TTEST PROCEDURE

VARIABLE: PL30 90 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.53833333	0.41087003	0.16773822	1.07000000	2.11000000	UNEQUAL	-0.4402	6.4	0.6743
ICMA PKU	4	1.65750000	0.42500000	0.21250000	1.21000000	2.10000000	EQUAL	-0.4433	6.0	0.6601

FOR PKU VARIANCES ARE EQUAL, F= 1.07 WITH 3 AND 5 DF PROB > F= 0.8003

VARIABLE: PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.73666667	0.48356911	0.19619152	0.92000000	2.33700000	UNEQUAL	2.5762	7.3	0.0110
ICMA PKU	5	1.53600000	0.64341270	0.26774294	0.56000000	2.29000000	EQUAL	0.5038	9.0	0.6270

FOR PKU VARIANCES ARE EQUAL, F= 1.78 WITH 4 AND 5 DF PROB > F= 0.5351

VARIABLE: PL38 150 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.57000000	0.40263764	0.163247461	1.20000000	2.00000000	UNEQUAL	.	.	.
ICMA PKU	5	1.57000000	0.40263764	0.163247461	1.20000000	2.00000000	EQUAL	.	.	.

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

VARIABLE: PL39 180 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.53166667	0.36891282	0.15000000	0.92000000	1.91000000	UNEQUAL	-0.7407	6.0	0.4754
ICMA PKU	5	1.71600000	0.42793691	0.19137920	1.31000000	2.23000000	EQUAL	-0.7399	9.0	0.4667

FOR PKU VARIANCES ARE EQUAL, F= 1.03 WITH 4 AND 5 DF PROB > F= 0.7391

VARIABLE: PL310 240 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
ICMA NORMALS	6	1.43066667	0.31972935	0.13052084	0.93000000	1.70000000	UNEQUAL	0.0841	6.4	0.4143
ICMA PKU	6	1.14200000	0.68576235	0.28066825	0.81000000	1.85000000	EQUAL	0.9450	9.0	0.3699

FOR PKU VARIANCES ARE EQUAL, F= 4.68 WITH 4 AND 5 DF PROB > F= 0.1252

TEST PROCEDURE

VARIABLE: PL311 3 MR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > T
IOWA NORMALS	6	1.49033333	0.37139626	0.15162276	0.99000000	1.91620000	UNEQUAL	-0.1007	4.0	0.9155
IOWA PKU	4	1.33750000	0.55061926	0.27030003	1.22000000	2.39000000	EQUAL	-0.2227	0.0	0.9435

FOR MOST VARIANCES ARE EQUAL, F= 2.25 WITH 3 AND 9 DF PROB > F= 0.4016

VARIABLE: PL312 6 MR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > T
IOWA NORMALS	6	1.55033333	0.43111097	0.17600032	1.03000000	1.96000000	UNEQUAL	-2.0024	5.1	0.1379
IOWA PKU	3	2.32333333	0.50731025	0.33970033	1.65000000	2.73000000	EQUAL	-2.2403	2.0	0.0392

FOR MOST VARIANCES ARE EQUAL, F= 1.06 WITH 2 AND 5 DF PROB > F= 0.4901

VARIABLE: PL313 7 MR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > T
IOWA NORMALS	6	1.63333333	0.42202666	0.17229174	0.94000000	2.01000000	UNEQUAL	-1.0363	4.0	0.3171
IOWA PKU	4	2.01000000	0.62200294	0.31142147	1.19000000	2.66000000	EQUAL	-1.1915	0.0	0.2623

FOR MOST VARIANCES ARE EQUAL, F= 2.10 WITH 3 AND 5 DF PROB > F= 0.4179

VARIABLE: PL314 8 MR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > T
IOWA NORMALS	6	1.74166667	0.40528591	0.16545728	1.16000000	2.00000000	UNEQUAL	-1.0065	4.0	0.3311
IOWA PKU	4	2.13250000	0.63062253	0.31941026	1.40000000	2.92000000	EQUAL	-1.1974	0.0	0.2634

FOR MOST VARIANCES ARE EQUAL, F= 2.48 WITH 3 AND 5 DF PROB > F= 0.3500

VARIABLE: PL31 0 MIN

----- AMINO-ALANINE BLOOD-ERYTHROCYTE -----

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > T
IOWA NORMALS	6	27.02033333	3.30033975	2.10033770	10.00000000	33.30000000	UNEQUAL	1.0546	0.4	0.3110
IOWA PKU	5	24.02000000	3.20347840	1.47200032	21.10000000	27.40000000	EQUAL	1.0173	0.0	0.3330

FOR MOST VARIANCES ARE EQUAL, F= 2.65 WITH 5 AND 4 DF PROB > F= 0.3665

VARNIABLE: P182 15 MIN

TOTAL WORKHRS	6	38	44003200	4.06540035	1.03069274	23.56000007	34.00000000	UNEQUAL	0.1211	5.5	11.0251
TOTAL PKU	6	20	62000000	0.51275514	3.00000000	22.50000000	47.00000000	EQUAL	0.1070	5.5	11.0251

```

F16  NOT VARIANCES ARE EQUAL, F16    4.38 WITH 4 A:D 5 DF
-----
PROB > F16 = 8.1363

```

VARIABLE PLSS 37 MIN

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

```
FOR H41 VARIANCES ARE EQUAL, F= 3.31 WITH 4 AND 5 DF
PROB > F= 0.2213
```

VARIAOLPI PL54 45 MIN

ICVA	4C9MELS
6	34.23333333
ICMA	PKU
5	37.28000000
	5.09011096
	7.737704408
	2.44790215
	3.23600318
	26.70000000
	43.00000000
	48.00000000
	UNEQUAL
	EQUA
	-0.7409
	7.0
	0.4004

```

PC2 MRI VARIANCES ARE EQUAL, F= 1.46 WITH 4 AND 5 OF
PROB > F= 0.6798

```

VARIABLE PLSS ON MIN

IC44	VCRAL9
6	30.1816667
ICVA	PNU
8	36.4879908
	5.51079136
	7.85350832
	2.25344539
	3.51301208
	27.68303208
	45.32088388
	48.58000000
UNEQUAL	
COUNT	
	*3.0715
	7.0
	0.9428

```

FOR NOT VARIANCES ARE EQUAL: F= 2.25 WITH 4 AND 5 DF
-----
PROB > F= 0.4582
-----

```

VARIABLE: PLSB 95 MIN

100k	6	6.31567297	26.45800000	43.45800000	UNEQUAL	0.0555	7.2	0.375
100k	4	2.04575131	1.32287500	34.00000000	EQUAL	0.0000	7.2	0.375

FOR H0: VARIANCES ARE EQUAL, F=5.78 WITH 5 AND 3 DF
PROB > F=0.0028

TEST PROCEDURE

VARIABLE PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > ITI
ICMA NORMALS	6	36.41777778	4.73331278	1.77731308	31.61000000	42.84000000	UNEQUAL	0.5707	6.0	0.2994
ICMA PKU	5	36.02000000	0.82476402	0.04636813	30.20000000	01.70000000	EQUAL	0.6137	6.0	0.2533

FOR NOI VARIANCES ARE EQUAL, F = 4.11 WITH 4 AND 5 DF PROB > F = 0.1533

VARIABLE PL38 150 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > ITI
ICMA NORMALS	6	36.41777778	4.73331278	1.77731308	31.61000000	42.84000000	UNEQUAL	0.5707	6.0	0.2994
ICMA PKU	5	36.06666667	1.33731367	0.07566440	32.30000000	35.10000000	EQUAL	0.5707	6.0	0.2994

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

VARIABLE PL39 180 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > ITI
ICMA NORMALS	6	36.41777778	4.73331278	1.77731308	31.61000000	42.84000000	UNEQUAL	0.5707	6.0	0.2994
ICMA PKU	5	35.26777778	0.45850021	0.00000000	33.00000000	46.00000000	EQUAL	0.5621	6.0	0.5878

FOR NOI VARIANCES ARE EQUAL, F = 3.31 WITH 5 AND 4 DF PROB > F = 0.2595

VARIABLE PL310 240 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > ITI
ICMA NORMALS	6	35.26666667	12.30663676	5.05657833	25.20000000	50.50000000	UNEQUAL	0.8027	7.0	0.3053
ICMA PKU	6	29.04000000	0.29626874	0.01577698	23.70000000	30.60000000	EQUAL	0.8413	9.0	0.4219

FOR NOI VARIANCES ARE EQUAL, F = 3.07 WITH 5 AND 4 DF PROB > F = 0.2142

VARIABLE PL311 5 MR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > ITI
ICMA NORMALS	6	31.93000000	11.73000000	4.79132693	25.40000000	54.00000000	UNEQUAL	1.2280	6.0	0.2648
ICMA PKU	4	23.57500000	4.10306150	2.03190075	21.50000000	30.40000000	EQUAL	1.0255	6.0	0.3331

FOR NOI VARIANCES ARE EQUAL, F = 0.10 WITH 5 AND 3 DF PROB > F = 0.1140

TEST PROCEDURE

VARIABLE PL312 6 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > .171
10A NORMALS	6	27.0200000	9.02919036	4.01275303	19.0000000	43.0000000	UNEQUAL	0.9021	6.0	0.3441
10A PKU	3	23.6600000	2.31156313	1.33408275	21.0000000	25.1000000	EQUAL	0.6994	7.0	0.5072

FOR M01 VARIANCES ARE EQUAL, F= 10.00 WITH 5 AND 2 DF PROB > F= 0.1005

VARIABLE PL313 7 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > .171
10A NORMALS	6	23.2716667	6.40722302	2.63019103	19.0000000	36.5000000	UNEQUAL	0.3002	7.0	0.7725
10A PKU	4	24.1250000	3.30014466	2.70507233	21.0000000	32.4000000	EQUAL	0.2090	8.0	0.7725

FOR M01 VARIANCES ARE EQUAL, F= 1.37 WITH 5 AND 3 DF PROB > F= 0.6486

VARIABLE PL314 8 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > .171
10A NORMALS	6	23.0066667	5.07134082	2.31531519	18.1500000	32.0000000	UNEQUAL	0.0463	6.0	0.9645
10A PKU	4	23.7250000	3.79043732	2.00521876	19.2000000	31.4000000	EQUAL	0.0403	8.0	0.9648

FOR M01 VARIANCES ARE EQUAL, F= 1.04 WITH 5 AND 3 DF PROB > F= 0.6997

AMINOALANINE BLOOD-PLASMA

VARIABLE PL31 0 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > .171
10A NORMALS	6	30.7550000	12.15044030	4.96366502	20.0000000	54.5000000	UNEQUAL	0.9374	6.0	0.3736
10A PKU	5	32.0760000	11.43067308	5.11204225	20.2000000	48.2000000	EQUAL	0.9315	9.0	0.3750

FOR M01 VARIANCES ARE EQUAL, F= 1.13 WITH 5 AND 4 DF PROB > F= 0.9308

VARIABLE PL32 15 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > .171
10A NORMALS	6	43.6150000	13.02007310	5.08317260	29.4000000	66.9100000	UNEQUAL	0.0270	6.0	0.3407
10A PKU	6	38.1900000	14.31734100	6.40244287	23.3000000	56.0000000	EQUAL	0.0305	9.0	0.3441

FOR M01 VARIANCES ARE EQUAL, F= 1.00 WITH 4 AND 6 DF PROB > F= 0.9047

TEST PROCEDURE

VARIABLE: PL33 30 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOWA NORMALS	6	52.17033333	16.8483677	6.8782369	35.3988889	76.1388889	UNEQUAL	0.4194	0.4	0.685
IOWA PKU	6	48.6888889	18.4793582	7.68652783	35.2488889	59.4288889	EQUAL	0.4011	0.0	0.6877

FOR MUI VARIANCES ARE EQUAL, F= 2.58 WITH 5 AND 4 DF PROB > F= 0.3705

VARIABLE: PL3 45 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOWA NORMALS	6	59.8888889	17.21875693	7.02871186	41.6888889	86.6888889	UNEQUAL	0.9932	0.1	0.1495
IOWA PKU	3	58.0000000	9.68452374	4.3310508	58.1000000	61.6888889	EQUAL	0.9427	0.0	0.3785

FOR MUI VARIANCES ARE EQUAL, F= 3.16 WITH 5 AND 4 DF PROB > F= 0.2877

VARIABLE: PL35 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOWA NORMALS	6	56.95333333	15.44235043	6.38431316	43.0888889	84.8388889	UNEQUAL	0.6682	0.3	0.5233
IOWA PKU	5	51.9388889	9.15912114	4.09658358	41.2588889	62.2888889	EQUAL	0.6367	0.0	0.5412

FOR MUI VARIANCES ARE EQUAL, F= 2.04 WITH 5 AND 4 DF PROB > F= 0.3333

VARIABLE: PL36 90 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOWA NORMALS	6	59.5816667	20.08892343	8.1686968	43.3588889	97.6188889	UNEQUAL	1.2684	7.0	0.2434
IOWA PKU	4	48.9825000	7.86484635	3.93282318	36.3888889	62.4888889	EQUAL	1.8774	0.0	0.3127

FOR MUI VARIANCES ARE EQUAL, F= 6.47 WITH 5 AND 3 DF PROB > F= 0.1551

VARIABLE: PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOWA NORMALS	6	51.2138889	12.59386881	5.14142182	35.4888889	69.9938889	UNEQUAL	1.6188	0.7	0.1413
IOWA PKU	5	48.9888889	8.39929648	3.75827954	29.2888889	51.1088889	EQUAL	1.8578	0.0	0.1538

FOR MUI VARIANCES ARE EQUAL, F= 2.25 WITH 5 AND 4 DF PROB > F= 0.4526

TEST PROCEDURE

VARIABLE1 PL30 180 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	8	20.00000000	0.50000000	0.16666667	21.50000000	20.10000000	UNEQUAL	1	0	0
ICMA PKU	3	20.00000000	0.50000000	0.16666667	21.50000000	20.10000000	EQUAL	1	0	0

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

VARIABLE1 PL30 180 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	8	42.40000000	18.00000000	4.11522633	31.70000000	59.20000000	UNEQUAL	1	0.3	0.1547
ICMA PKU	3	32.40000000	11.00000000	4.03140710	18.00000000	49.30000000	EQUAL	1	0.3	0.1464

FOR M01 VARIANCES ARE EQUAL, F= 1.20 WITH 4 AND 9 DF PROB > F= 0.0295

VARIABLE1 PL30 240 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	8	40.40000000	19.90000000	7.55544645	26.20000000	75.90000000	UNEQUAL	1	0.2	0.1022
ICMA PKU	3	26.35000000	18.75000000	4.00000000	13.70000000	42.70000000	EQUAL	1	0.0	0.1073

FOR M01 VARIANCES ARE EQUAL, F= 2.96 WITH 5 AND 4 DF PROB > F= 0.0319

VARIABLE1 PL31 5 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	8	36.87666667	11.93731064	4.00135483	24.70000000	55.00000000	UNEQUAL	1	7.4	0.0000
ICMA PKU	4	16.72750000	9.94201996	4.97130090	3.00000000	29.10000000	EQUAL	1	0.0	0.0285

FOR M01 VARIANCES ARE EQUAL, F= 1.45 WITH 5 AND 3 DF PROB > F= 0.0092

VARIABLE1 PL312 0 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	8	32.47166667	9.37623066	3.90948796	22.41000000	44.30000000	UNEQUAL	1	6.4	0.0000
ICMA PKU	3	21.50000000	5.87640480	3.30274389	13.90000000	27.62000000	EQUAL	1	7.0	0.0000

FOR M01 VARIANCES ARE EQUAL, F= 2.66 WITH 5 AND 2 DF PROB > F= 0.0917

TTEST PROCEDURE

VARIABLE: PL313 7 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	20.33166667	7.23126384	2.93215110	21.41000000	37.92000000	UNEQUAL	0.2700	4.0	0.7922
ICMA PKU	4	20.59750000	10.54763487	5.47301703	10.76000000	42.00000000	EQUAL	0.3040	0.0	0.7602

FOR M01 VARIANCES ARE EQUAL, F = 2.20 WITH 3 AND 3 DF PROB > F = 0.3911

VARIABLE: PL314 0 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	20.37066667	6.18023398	2.49043459	23.31000000	36.50000000	UNEQUAL	1.3091	0.1	0.2193
ICMA PKU	4	22.06000000	6.78289907	3.33144903	16.50000000	32.30000000	EQUAL	1.3904	0.0	0.1093

FOR M01 VARIANCES ARE EQUAL, F = 1.21 WITH 3 AND 3 DF PROB > F = 0.7944

VARIABLE: PL31 0 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	2.20666667	0.93311419	0.38910724	1.50000000	3.90000000	UNEQUAL	-2.1033	0.0	0.0740
ICMA PKU	5	3.06200000	1.42915810	0.63913335	1.50000000	5.00000000	EQUAL	-2.1098	0.0	0.0503

FOR M01 VARIANCES ARE EQUAL, F = 2.25 WITH 4 AND 5 DF PROB > F = 0.3979

VARIABLE: PL32 15 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	2.34333333	1.13364389	0.46200700	1.37000000	4.50000000	UNEQUAL	-1.0330	7.2	0.0033
ICMA PKU	5	3.05200000	1.34635100	0.60163063	2.00000000	5.75000000	EQUAL	-1.0920	0.2	0.0774

FOR M01 VARIANCES ARE EQUAL, F = 1.06 WITH 4 AND 5 DF PROB > F = 0.5107

VARIABLE: PL33 30 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	2.31000000	1.16747591	0.47662004	0.90000000	4.15000000	UNEQUAL	-1.7030	0.2	0.1334
ICMA PKU	5	4.61200000	2.71316085	1.21336474	1.10000000	7.61000000	EQUAL	-1.0948	0.0	0.0908

FOR M01 VARIANCES ARE EQUAL, F = 5.40 WITH 4 AND 5 DF PROB > F = 0.0020

TEST PROCEDURE

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VARIABLE: PL34 45 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	OF	PROB > .171
ICMA NORMALS	6	2.07033333	0.09900031	0.04017004	0.03000000	3.40000000	UNEQUAL	-2.0941	5.8	0.0426
ICMA PKU	6	4.03600000	1.00000020	0.04103270	0.00000000	5.30000000	EQUAL	-2.2167	0.3	0.0530
FOR MUI VARIANCES ARE EQUAL, F = 3.34 WITH 4 AND 5 DF PROB > F = 0.1903										

VARIABLE: PL35 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	OF	PROB > .171
ICMA NORMALS	6	2.13666667	1.32007345	0.53924433	0.03000000	4.30000000	UNEQUAL	-2.2003	6.7	0.0640
ICMA PKU	5	4.45200000	2.01061433	0.89017407	1.00000000	6.00000000	EQUAL	-2.2001	9.0	0.0471
FOR MUI VARIANCES ARE EQUAL, F = 2.32 WITH 4 AND 5 DF PROB > F = 0.3015										

VARIABLE: PL36 90 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	OF	PROB > .171
ICMA NORMALS	6	1.00033333	1.17970194	0.48011300	0.43000000	3.70000000	UNEQUAL	-2.0972	4.1	0.1032
ICMA PKU	4	4.44000000	2.31740000	1.15073404	1.00000000	5.00000000	EQUAL	-2.4000	8.0	0.0431
FOR MUI VARIANCES ARE EQUAL, F = 3.00 WITH 3 AND 5 DF PROB > F = 0.1002										

VARIABLE: PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	OF	PROB > .171
ICMA NORMALS	6	2.20166667	1.30747721	0.53377534	0.60000000	4.40000000	UNEQUAL	-1.4020	6.7	0.1091
ICMA PKU	8	3.00600000	2.00000020	0.69400000	0.40000000	5.47000000	EQUAL	-1.5230	0.0	0.1010
FOR MUI VARIANCES ARE EQUAL, F = 2.34 WITH 4 AND 5 DF PROB > F = 0.3757										

VARIABLE: PL38 150 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	OF	PROB > .171
ICMA NORMALS	6	2.20166667	1.30747721	0.53377534	0.60000000	4.40000000	UNEQUAL	-1.4020	6.7	0.1091
ICMA PKU	3	3.63666667	0.30072133	0.17362106	3.40000000	4.00000000	EQUAL	-	-	-

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

TEST PROCEDURE

VARIABLE PLS14 0 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	CF	PROB > IT
ICMA NORMALS	6	2.7003333	1.06341745	0.43413835	1.36000000	4.45000000	UNEQUAL	2.7527	4.4	0.4124
ICMA PKU	4	3.67350000	1.32000440	0.61304220	1.05000000	4.50333330	EQUAL	2.0422	0.0	0.4241

FOR MOST VARIANCES ARE EQUAL, F= 2.93 WITH 3 AND 9 DF PROB > F= 0.2771

VARIABLE PLS1 2 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	CF	PROB > IT
ICMA NORMALS	6	0.86300000	2.04079999	0.83682734	0.61000000	11.89000000	UNEQUAL	2.5309	0.1	0.0342
ICMA PKU	5	7.36000000	1.10820257	0.51885836	5.00000000	8.67000000	EQUAL	2.4832	0.0	0.0337

FOR MOST VARIANCES ARE EQUAL, F= 3.12 WITH 5 AND 4 DF PROB > F= 0.2020

VARIABLE PLS2 15 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	CF	PROB > IT
ICMA NORMALS	6	10.61166667	1.07617919	0.44297229	8.24000000	12.77000000	UNEQUAL	3.4839	0.0	0.2771
ICMA PKU	5	7.59000000	1.10070990	0.53209722	5.00000000	8.07000000	EQUAL	3.3728	0.0	0.0002

FOR MOST VARIANCES ARE EQUAL, F= 1.90 WITH 5 AND 4 DF PROB > F= 0.3203

VARIABLE PLS3 30 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	CF	PROB > IT
ICMA NORMALS	6	11.18666667	2.32415719	0.94803320	7.71000000	14.67000000	UNEQUAL	2.3127	0.7	0.0470
ICMA PKU	5	8.43200000	1.57703713	0.78563021	6.11000000	10.40000000	EQUAL	2.2204	0.0	0.0328

FOR MOST VARIANCES ARE EQUAL, F= 2.17 WITH 5 AND 4 DF PROB > F= 0.4729

VARIABLE PLS4 45 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	CF	PROB > IT
ICMA NORMALS	6	11.23666667	2.33369084	0.95354310	8.30000000	14.80000000	UNEQUAL	3.1941	7.2	0.0154
ICMA PKU	5	7.87400000	1.06629264	0.47600037	6.44000000	9.42000000	EQUAL	2.0931	0.0	0.0161

FOR MOST VARIANCES ARE EQUAL, F= 4.88 WITH 5 AND 4 DF PROB > F= 0.1530

TEST PROCEDURE

VARIABLE1 PL33 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROD	P
ICMA NORMALS	6	10.1166667	1.86262867	0.76641329	7.50000000	12.50000000	UNEQUAL	3.1221	0.0	0.3123	0.0123
ICMA PKU	5	6.89444444	1.56079467	0.60000000	6.21000000	9.15000000	EQUAL	3.20.5	0.0	0.0123	0.0123

FOR TWO VARIANCES ARE EQUAL, F= 1.42 WITH 5 AND 4 DF PROD = F= 0.7538

VARIABLE1 PL36 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROD	P
ICMA NORMALS	6	0.30000000	1.72000000	0.70572146	7.60000000	11.50000000	UNEQUAL	3.0000	7.0	0.3155	0.3155
ICMA PKU	4	6.00000000	0.00000000	0.00000000	5.00000000	7.00000000	EQUAL	2.7416	0.0	0.0000	0.0000

FOR TWO VARIANCES ARE EQUAL, F= 3.01 WITH 5 AND 3 DF PROD = F= 0.3029

VARIABLE1 PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROD	P
ICMA NORMALS	6	0.00000000	1.62306706	0.66261433	6.00000000	10.00000000	UNEQUAL	3.4058	0.7	0.3275	0.3275
ICMA PKU	5	6.00000000	1.00000000	0.40000000	5.10000000	7.10000000	EQUAL	3.3358	0.0	0.0000	0.0000

FOR TWO VARIANCES ARE EQUAL, F= 2.24 WITH 5 AND 4 DF PROD = F= 0.4056

VARIABLE1 PL38 150 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROD	P
ICMA NORMALS	6	0.00000000	0.00000000	0.00000000	5.40000000	6.90000000	UNEQUAL	0.0000	0.0	0.0000	0.0000
ICMA PKU	5	0.00000000	0.00000000	0.00000000	5.40000000	6.90000000	EQUAL	0.0000	0.0	0.0000	0.0000

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.

VARIABLE1 PL39 180 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROD	P
ICMA NORMALS	6	0.00000000	1.50000000	0.60000000	7.00000000	10.00000000	UNEQUAL	3.0000	0.0	0.0000	0.0000
ICMA PKU	5	0.00000000	0.00000000	0.00000000	5.00000000	7.00000000	EQUAL	3.2110	0.0	0.0000	0.0000

FOR TWO VARIANCES ARE EQUAL, F= 2.04 WITH 5 AND 4 DF PROD = F= 0.3331

TEST PROCEDURE

VARIABLE: PLS10 240 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	0.3000000	1.3600113	0.5600000	5.9400000	10.2000000	UNEQUAL	2.7320	0.1	0.7247
ICMA PKU	2	0.0420000	1.35009176	0.60700015	4.0200000	8.3200000	EQUAL	2.7894	0.0	0.0211

FOR MUI VARIANCES ARE EQUAL, F = 1.30 WITH 4 AND 5 DF PROB > F = 0.7650

VARIABLE: PLS11 3 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	0.0100000	1.0000000	0.4094000	7.3600000	11.0000000	UNEQUAL	0.9765	4.2	0.3924
ICMA PKU	4	7.2200000	2.9200000	1.4094000	4.7600000	11.0100000	EQUAL	1.1000	0.0	0.2598

FOR MUI VARIANCES ARE EQUAL, F = 3.40 WITH 3 AND 5 DF PROB > F = 0.2133

VARIABLE: PLS12 0 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	0.7500000	1.71737705	0.70111657	7.1600000	11.0000000	UNEQUAL	0.0000	2.4	1.0000
ICMA PKU	3	0.7500000	3.09011292	2.13040769	5.0000000	12.4000000	EQUAL	0.0000	7.0	1.0000

FOR MUI VARIANCES ARE EQUAL, F = 4.62 WITH 2 AND 5 DF PROB > F = 0.1463

VARIABLE: PLS13 7 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	0.7666667	1.26264273	0.51347174	7.7500000	10.3000000	UNEQUAL	0.2772	3.0	0.7961
ICMA PKU	4	0.3525000	2.00472667	1.40036333	5.9000000	12.3600000	EQUAL	0.3230	0.3	0.7550

FOR MUI VARIANCES ARE EQUAL, F = 4.93 WITH 3 AND 5 DF PROB > F = 0.1181

VARIABLE: PLS14 0 HR

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
ICMA NORMALS	6	0.0466667	2.00391537	0.84230002	7.3000000	11.4000000	UNEQUAL	1.0344	0.0	0.1112
ICMA PKU	4	0.4730000	1.06064590	0.50432205	4.4100000	0.4700000	EQUAL	1.0111	0.0	0.1077

FOR MUI VARIANCES ARE EQUAL, F = 1.10 WITH 5 AND 3 DF PROB > F = 1.0000

VARIABLE PLS1 3 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
DATA NORMALS	6	14.30000000	2.00012999	1.00007226	11.01000000	16.47000000	UNEQUAL	0.4125	0.6	0.7001
DATA PRU	5	13.75000000	2.00004000	1.00000000	9.32000000	16.00000000	EQUAL	0.4129	0.0	0.0003

FOR PLS1 VARIANCES ARE EQUAL, F= 1.02 WITH 4 AND 5 DF PROB > F= 0.9544

VARIABLE PLS2 15 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
DATA NORMALS	6	15.00000000	3.73441810	1.52473313	10.21000000	19.10000000	UNEQUAL	3.3204	0.0	0.0115
DATA PRU	5	15.95000000	3.39439111	1.51797700	9.71000000	17.10000000	EQUAL	0.5214	0.0	0.0147

FOR PLS2 VARIANCES ARE EQUAL, F= 1.21 WITH 5 AND 4 DF PROB > F= 0.8777

VARIABLE PLS3 30 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
DATA NORMALS	6	14.50000000	2.09930070	1.02443000	10.31000000	17.10000000	UNEQUAL	0.9623	0.0	0.3442
DATA PRU	5	13.00000000	3.32325410	1.37564717	7.01000000	16.70000000	EQUAL	0.9788	0.0	0.3532

FOR PLS3 VARIANCES ARE EQUAL, F= 1.30 WITH 4 AND 5 DF PROB > F= 0.7281

VARIABLE PLS4 45 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
DATA NORMALS	6	16.44000000	4.13500000	1.69046900	12.10000000	21.00000000	UNEQUAL	1.0200	0.7	0.1710
DATA PRU	5	12.60000000	2.00745000	1.00000000	9.00000000	15.00000000	EQUAL	1.7622	0.0	0.1110

FOR PLS4 VARIANCES ARE EQUAL, F= 2.17 WITH 5 AND 4 DF PROB > F= 0.4728

VARIABLE PLS5 60 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > IT
DATA NORMALS	6	15.07156667	3.56205313	1.45452052	10.45000000	19.91000000	UNEQUAL	0.0200	0.0	0.4255
DATA PRU	5	13.16000000	3.27000000	1.46611000	9.00000000	15.00000000	EQUAL	0.0210	0.0	0.4324

FOR PLS5 VARIANCES ARE EQUAL, F= 1.10 WITH 5 AND 4 DF PROB > F= 0.0070

TEST PROCEDURE

VARIABLE: PL36 90 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOHA NORMALS	6	13.66380000	4.86949303	1.60136440	9.16000000	28.27000000	UNEQUAL	2.3441	7.0	0.7390
IOHA PKU	4	12.91250000	2.84383858	1.42252020	8.89000000	15.30000000	EQUAL	0.3160	0.0	0.7502

FOR NOI VARIANCES ARE EQUAL, F = 2.05 WITH 5 AND 3 DF PROB > F = 0.3099

VARIABLE: PL37 120 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOHA NORMALS	6	12.57033333	0.68677924	2.72086620	3.80000000	20.17000000	UNEQUAL	0.0570	0.0	0.9533
IOHA PKU	5	12.39400000	3.07302856	1.64202473	7.23000000	16.10000000	EQUAL	0.0040	0.0	0.9375

FOR NOI VARIANCES ARE EQUAL, F = 3.31 WITH 5 AND 4 DF PROB > F = 0.2609

VARIABLE: PL38 150 MIN

GROUP	N	MEAN	STD DEV	STD ERROR	MINIMUM	MAXIMUM	VARIANCES	T	DF	PROB > |T|
IOHA NORMALS	6	13.24333333	7.03947000	4.41003503	0.00000000	23.70000000	UNEQUAL	0.0000	0.0	0.9999
IOHA PKU	5	13.24333333	7.03947000	4.41003503	0.00000000	23.70000000	EQUAL	0.0000	0.0	0.9999

NOTE: ALL VALUES ARE THE SAME FOR ONE CLASS LEVEL.