One Health EJP Joint Research Project TOXOSOURCES investigates the relative importance of different sources of Toxoplasma gondii infection in Europe

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INTRODUCTION

Toxoplasma gondii is a zoonotic parasite that causes a high disease burden. The infection can be acquired by ingesting oocysts (environmental pathway) or tissue cysts (meat-borne pathway). The relative contributions of these two pathways to infection and disease in humans has been unknown, partly due a to lack of appropriate methods. TOXOSOURCES is a Joint Research Project of the One Health EJP that focuses on Toxoplasma gondii at the interface between humans, animals, food, and the environment.

METHODOLOGY

TOXOSOURCES investigates the relative contributions of the different transmission routes and sources of T. gondii infection using multidisciplinary approaches. TOXOSOURCES consortium has collected data for a multicentre quantitative microbiological risk assessment for T. gondii: a multicentre quantitative exposure survey was conducted, and systematic literature reviews yielded estimates of prevalence of the infection in a high number of animal host species as well as in fresh produce and the environment. After an extensive literature review was conducted to support the selection of a method to detect T. gondii oocysts in fresh produce, a Standard Operating Procedure was developed, implemented and validated, and is being applied in a multicentre survey on ready-to-eat salads. TOXOSOURCES has selected promising antigens for exploring serology for detecting T. gondii infections caused by oocysts, and an unprecedented effort of whole genome sequencing of T. gondii isolates was used to identify polymorphic marker regions for the establishment of a new typing method to detect within-genotype variation.

RESULTS

TOXOSOURCES consortium has more than 20 partners across Europe. The main outcomes of TOXOSOURCES will include quantitative and comparable estimates of the contribution of the main sources and transmission routes to T. gondii infections in Europe.

DISCUSSION

The TOXOSOURCES consortium itself is a noteworthy achievement - exemplifying a successful cross-sectoral, international One Health collaboration, which is needed to address this zoonotic parasite.

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