Application of biotechnology to the epidemiology and control of porcine and human Taenia solium infection in Mexico

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Project details

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<th>Total cost:</th>
<th>Topic(s):</th>
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<tr>
<td>Not available</td>
<td>Funding scheme:</td>
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<td>EU contribution:</td>
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Objective

Taenia solium is responsible for serious public health problems, in addition to causing financial losses to pig producers in areas of high endemicity. While evidence from Europe suggests that improvements in public health and pig management practices can reduce the prevalence of the parasite significantly, the development of specific and sensitive diagnostic procedures would greatly aid control by facilitating epidemiolog studies, the diagnosis and treatment of infected humans, and the gathering of prevalence and transmission data in areas of high endemicity. Such information is an essencal basis for the development of control strategies including the introduction of a recombinant vaccine. This proposal therefore aims to improve diagnosis of human and porcine cysticercosis, to conduct epidemiological surveys as a prelude to selecting appropriate study areas for assessing control via drug treatment and to develop a recombinant vaccine. The detection of Taenia solium neurocysticercosis in man will be of central importance to this project.

There are three specific aims to this proposal:

a) Train the Mexican component in the use of diagnostic procedures recently developed in the laboratories of the British proposers. Specifically, a serological test for viable cysts and a DNA based test for differentiating the two related tapeworms of man, Taenia saginata and Taenia solium. These procedures will also be used in epidemiological surveys to study the dynamics of transmission of cysticercosis in Mexico and to assist in the diagnosis and treatment of human neurocysticercosis. b) Develop a sensitive and specific serodiagnostic test for antibodies to the metacestode based on the identification and molecular cloning of already defined secreted metacestode antigens stimulating appropriate levels of parasite-specific antibodies. This new assay will complement the procedures indicated above in the proposed epidemiological surveys. c) Develop a vaccine based on an already identified protective oncospheral component (work of the British investigators), which will be cloned and expressed and then subsequently tested in Mexico.
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