Novel Spore Wall Proteins and Genes From Microsporidia

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Technology description

Summary

Microsporidia are obligate, intracellular organisms that infect a wide range of hosts, including humans. Disease occurs mostly in immunosuppressed individuals, particularly those with AIDS, but infections have been documented in immunocompetent persons with diarrhea. Effective treatment is available for disease caused by some species. However, the most common type can only be treated with an experimental drug that is not available.

The invention presented here involves the isolation and use of two spore wall proteins of E. intestinalis , spore wall protein 1 (SWP-1) and spore wall protein 2 (SWP-2). These form the wall of the spore and enable the parasite to survive outside the host and therefore enable transmission. Although infection occurs after the spore contents are injected through the cell membrane into the host cell, proximity to the cell and a high likelihood of infection occurs because the spore wall attaches to the cell. Therefore, prevention of binding by antibodies, for instance, is likely to prevent infection. Some spores may also be infectious after being taken up by certain host cells. After infection, multiplication by merogony and sporogony occurs, releasing more infectious spores into the host and/or environment.

The invention claims SWP-1 and SWP-2 as isolate proteins and as immunogenic fragments of these parent proteins. Further claims include the nucleic acids that encode the whole proteins as well as the immunogenic fragments. A second series of claims include the methods and use of these reagents for diagnostic kit development as well as prevention of infectivity using the proteins as well as nucleic acid constructs of SWP-1 and SWP-2. A third series of claims covers the administration and use of SWP-1 and SWP-2, either as whole proteins, immunogenic fragments or nucleic acid expression constructs along with a pharmaceutically acceptable carrier for the treatment of microsporidiosis. A final set of claims include the administration of certain ligands to SWP-2 in pharmaceutically acceptable carriers for the prevention and treatment of microsporidiosis.

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