Coccidian parasites of Public Health Importance

Coccidian parasites are known to infect a wide variety of animals, including humans, birds and livestock. They are usually species-specific, but the well-known exceptions are toxoplasmosis caused by *Toxoplasma gondii* and cryptosporidiosis caused by *Cryptosporidium parvum*. The zoonotic coccidian parasites known to cause disease in humans belong to the genus *Cystisospora*, *Cryptosporidium*, *Toxoplasma* and *Sarcocystis* respectively.

*Cystisospora belli* is the only species of *Cystisospora* that infects man and is frequently responsible for "traveller's diarrhea". *C. belli* is found throughout the world but is more common in tropical and subtropical regions. This disease is typically mild in healthy individuals but can be life threatening in people who are young or immunodepressed. Cystisosporosis was largely ignored until its recent emergence as one of the opportunistic infections affecting AIDS patients.

Toxoplasmosis is an opportunistic infection in humans caused by protozoan parasite *Toxoplasma gondii*, widespread globally and responsible for serious complications in individuals with impaired immune defences as well as congenitally infected infants. The high prevalence rate in some parts of the world coupled with the current drug treatments that trigger hypersensitivity reactions makes the development of immunotherapeutic interventions a highly important research priority. Immunotherapeutic strategies could either be a vaccine which would confer a pre-emptive immunity to infection, or passive immunization in case of recurrent clinical diseases. As the severity of clinical manifestations is often greater in developing nations, the development of well-tolerated and safe immunotherapeutic becomes not only a scientific pursuit, but a humanitarian enterprise. In the last few years, much progress has been made in vaccine research with new antigens, novel adjuvants, and innovative vaccine delivery such as nanoparticles and antigen encapsulations.

*Cryptosporidium* is increasingly gaining attention as a human and an animal pathogen mainly due to its dominant involvement in worldwide waterborne outbreaks. Ingestion of oocysts can cause gastrointestinal disease in immunocompetent and immunosuppressed human patients and those working with animals, including farmers and veterinarians, are considered to be at increased risk. Efforts to minimise transmission in people handling infected animals should include instruction regarding, and rigorous attention to, hygiene, protective clothing and efforts to disinfect contaminated areas.

*Sarcocystis* spp. have indirect life cycle with an intestinal infections occur in the definitive host, and tissue invasion is seen in the intermediate host. Three species viz., *Sarcocystis hominis*, *S. heydorni* (intermediate hosts: cattle) and *S. suihominis* (intermediate hosts: pig) have been identified where humans serve as definitive hosts and get infected by ingesting raw or undercooked beef and pork respectively. Although others may exist, till now only *S. nesbitti* has been identified in humans serving as intermediate hosts based on 18S ribosomal DNA (rDNA) sequence analysis. Though the life cycle of *S. nesbitti* remains unknown, this zoonosis is linked to ingestion of food and water contaminated with the sporocysts of this species.

Biography

Ananda, K. J. has completed PhD in Veterinary Parasitology at the age of 30 years from Veterinary College, UAS, Bangalore, Karnataka, India & rendered 12 years of service in teaching and research, specialized in Immunological and Molecular Diagnosis of Parasitic diseases. Presently working as Associate Professor & Guided four PG students & bestowed with Best Research Paper and poster award in National Conferences & published more than 45 research papers in both International & National Journals. He was the recipient of University gold medal for Ph.D and handled 05 research project and presently with two extramural research projects.