ABSTRACT

*Blastocystis* sp. is an enteric protozoan organism, found in the intestinal tract of a wide range of animals and humans. The parasite is often incriminated to cause symptoms such as diarrhoea, abdominal pain, bloating and flatulence. Many publications have highlighted the high prevalence of *Blastocystis* sp. in various animal hosts, however, only very few studies have been conducted in Malaysia. Therefore, this study aimed to screen a range of animals in Malaysia for *Blastocystis* sp. infection which could be a reservoir for human infection when in close association. High prevalence of *Blastocystis* sp. were seen in the ostriches and pigs with 100% positive respectively and for the first time, subtype 6 *Blastocystis* sp. was seen in ostrich isolates. Previous findings have described on either cysts or vacuolar forms, however, these are confined to limited animals. This study has provided evidence that the parasite’s thick cyst wall is primarily responsible for causing the infection in rats and the thickness of the cyst wall corresponded to the number of days taken to cause the infection. This is the first study to establish a schematic drawing which provides a key-like guidance to differentiate the morphology of the vacuolar and cystic forms of *Blastocystis* sp. isolated from animals which can provide information for source tracking. The worldwide distribution and increase in the infection rate demonstrate the zoonotic potential and the parasite’s low host-specificity. The present study also suggests that *Blastocystis* sp. exhibits low host specificity and the possibility of human to animal cross-infectivity cannot be ruled out. Despite studies reporting on the ability of *Blastocystis* sp. to be invasive, there have been no studies to assess the histopathological changes in rats infected with *Blastocystis* ST3 isolated from symptomatic and asymptomatic patients. The gross changes in the histopathology and elevated level of
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serum amylase in symptomatic rats despite being infected with the same subtype from symptomatic and asymptomatic human isolates further confirm the pathogenic role of Blastocystis sp. Very few studies have described the transformational details during the excystation of Blastocystis sp. cysts. To date, there has been no comparison on the excystation rates and transformational changes between parasites from symptomatic and asymptomatic isolates. This present study demonstrated marked differences in the excystation process between Blastocystis sp. from asymptomatic and symptomatic isolates. The present study has shown that extensive mucosal sloughing occurred in the intestines of rats infected with asymptomatic isolate which revealed that Blastocystis sp. excysts and proliferate soon after infection compared to symptomatic group. This finding concurred with previous studies that showed proliferation to be the highest in in-vitro cultures of the asymptomatic isolates between days 3 and 6. Results also showed that rapid excystation and proliferation in asymptomatic isolates may cause heightened symptoms immediately to the host once infected.