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Abstract

Plasmodium falciparum, the causative agent of severe human malaria shares the presence of apical complex organelles with the free-living predatory alveolate, *Colpodella* sp. In this study we investigated morphological, biochemical and molecular characteristics of *Colpodella* sp. in a diprotist culture containing *Bodo caudatus* as prey. *Colpodella* attaches to its prey using the apical end. Attachment lasted for approximately 20 minutes while the cytoplasmic contents of the prey were aspirated into the posterior food vacuole of *Colpodella* in a process known as myzocytosis. Indirect immunofluorescence assay (IFA) using *P. falciparum* rhoptry specific antibodies showed intense reactivity with cytoplasmic vesicles of *Colpodella* but not *Bodo caudatus*. DNA isolated from a pellet of the diprotist culture was used in polymerase chain reaction (PCR) with oligonucleotide primers designed to target the *P. falciparum* (strains 3D7, DD2, FC27 and FCR8) rhoptry genes Rhop-3, Rhop-1 and RAMA. An approximately 2,906 bp single fragment was amplified from *P. falciparum* (strains 3D7 and FCR8) and diprotist DNA using RAMA primers. Similarly, DNA fragments of a similar size were amplified from the same DNA templates using primers targeting a highly conserved fragment of the18S rRNA used to identify a colpodellid associated with a human infection. Primers targeting conserved regions of the 18S rRNA of kinetoplastid species amplified a DNA fragment of 650 bp in *P. falciparum* (strains 3D7, DD2, FC27 and FCR8) and diprotist DNA. In addition, the kinetoplastid primers amplified a second fragment of approximately 2 kb from the diprotist DNA. Primers targeting the *P. falciparum* Rhop-1 gene amplified a 690 bp DNA fragment in all four *P. falciparum* strains but amplified a fragment of approximately 2 kb from diprotist DNA. Primers for the *P. falciparum* Rhop-3 gene target amplified a 660 bp DNA fragment in all four *P. falciparum* strains while DNA fragments of 2 kb, 800 bp and 500 bp were amplified from the diprotist DNA template. DNA sequence analysis of PCR amplified diprotist DNA identified the Rhop-3 gene demonstrating conservation of the Rhop-3 gene in *Colpodella* sp.