

Parasitic protists are the cause of countless pathological conditions and economic issues in many parts of the world. While being phylogenetically unrelated, they share many similarities in their approach to satisfying the essential needs. Unlike the much studied energy metabolism, amino acids utilisation pathways are rather unexplored areas. This review shows that in many cases, the parasitic life style has not had the same impact on the amino acid metabolism as it did on the energy metabolism of the protists, which is often severely reduced. Novel pathways have been found in many of the organisms in question, for the biosynthesis of amino acids deemed both essential and non-essential in humans. The arginine dihydrolase pathway found in *Trichomonas* and *Giardia* represents a completely new way of utilising the said amino acid. The metabolism of sulfur-containing amino acid has been a matter of intensive research for their non-proteogenic roles. Polyamines are organic nitrogenous compounds involved in many vital processes in the cells, including DNA replication and protein translation. The synthesis of polyamines and their derivatives is elucidated, as it is directly connected to the amino acid metabolism. Finally, the exploitation of the unique pathways described integrates the previous research with the aim of introducing the amino acid metabolism as an as of yet untapped target for drug development.