World Academy of Science, Engineering and Technology
International Journal of Animal and Veterinary Sciences
Vol:17, No:08, 2023

Evaluation of Ficus racemosa (Moraceae) as a Potential Source for Drug Formulation Against Coccidiosis

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Abstract : Coccidiosis is a protozoan parasitic disease of genus Eimeria. It is an avian infection causing a great economic loss of 3 billion USD per year globally. A number of anticoccidial drugs are in use however many of them have side effects and cost effective. With increase in poultry demand throughout the world there is a need of more drugs and vaccines against coccidiosis. The present study is based upon the use of F. racemosa a medicinal plant to be a potential source of anticoccidial agents. The methanolic leaves extract was fractionated by column and thin layer chromatography and got nineteen fractions. Each fraction different concentrations was evaluated for its anticoccidial properties in an invitro experiment against E. tenella, E. necatrix and E. mitis. The anticoccidial active fractions were further characterized by spectroscopy (UV-Vis, FTIR) and GC-MS analysis. The in silico molecular docking of active fractions identified compounds were carried out. Among all fractions significantly maximum sporulation inhibition efficacy was shown by F-19 (67.11±2.18) followed by F-15 (65.21±1.34) at concentration of 30mg/ml against E. tenella. The significantly highest sporozoites viability inhibition was shown by F-19 (69.23±2.11) followed by F-15 (67.14±1.52) against E. necatrix at concentration 30mg/ml. Anticoccidial active fractions 15 and 19 showed peak spectrum at 207 and 202nm respectively by UV analysis. Their FTIR analysis confirmed the presence of carboxylic acid, amines, phenols, etc. Anticoccidial active compounds like Cyclododecane methanol, oleic acid, Octadecanoic acid, etc were identified by GC-MS analysis. Identified compounds in silico molecular docking study showed that cyclododecane methanol of F-19 and oleic acid of F-15 showed highest binding affinity with target S-Adenosylmethionine synthase. Hence for further authentication in vivo anticoccidial studies are recommended.

Keywords : ficus racemosa, cluster fig, column chromatography, anticoccidial fractions, GC-MS, molecular docking., s-adenosylmethionine synthase
Conference Title : ICASVM 2023 : International Conference on Animal Science and Veterinary Medicine
Conference Location : Vancouver, Canada
Conference Dates : August 03-04, 2023