Exploring the Effectiveness of Omani Frankincense Boswellia Sacra Oleo-Gum Resin Extracts and Essential Oils Against the Parasite Causing Cystic Echinococcosis Invitro Effect

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ABSTRACT

Cystic echinococcosis (CE) is a life threating disease and a major public health problem caused by the larval stage of the tapeworm named Echinococcus granulosus. Cystic echinococcus is transmitted from animals to human (zoonotic disease). In endemic areas, the incidence rate reaches over 50 per 100,000 person/year and prevalence may be as high as 5-10%. It is found in most countries worldwide, but it is not an epidemic disease. Current treatment involves surgical removal of the cysts, percutaneous drainage, or chemotherapy with anthelmintic drugs like albendazole. While albendazole is effective in treating (CE) in both humans and animals, though, it has drawbacks, including poor absorption, vertigo, liver enzymes elevations plus the risk of recurrence. Recently, there was a high tendency among researchers to evaluate and present herbal plants as an alternative option due to being easily available, inexpensive, cheap and with low side effects. Therefore, the current project aims to explore the scoliocidal potential of Boswellia sacra extracts, and essential oils on Echinococcus granulosus both in vitro and in vivo. Protoscolices were collected from hydatid cysts obtained from infected sheep livers. Many polar and non-polar solvents were used to obtain a wide range of extracts from B. sacra gum resin. Extracts were prepared and applied at various concentrations (e.g. 30, 3, 0.3 µg/ml) for different exposure times (2-60 minutes). The mortality rates were assessed using 0.1% eosin staining by light microscopy. The results so far obtained indicate that all extracts used in the current study displayed promising significant scoliocidal effects against E. granulosus in vitro speaking. However, the standardized B. sacra gum resin extract showed the highest scoliocidal activity in vitro, achieving 100% mortality at 3µg/ml after 10 minutes of exposure compared to both negative and treated positive control with albendazole. These results are promising, however, additional in vivo studies are in progress to confirm such activity.

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