



Research article

Effects of fungal secondary metabolites produced from Egyptian marine as hepatoprotective on female rats

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Abstract

The aim of this study was to evaluate the hepatoprotective effect of the secondary metabolites produced from Egyptian marine environment on female rats. Materials and Methods: Different marine specimens were collected from Egyptian seas then used for fungal isolation on biomalt agar medium. The isolated fungi were purified and identified. The four fungal isolates that secondary metabolites obtained through ethyl acetate extraction exhibited the highest antioxidative effects was subjected to full morphological identification and evaluation of *in vitro* and *in vivo* hepatoprotective activities. The hepatoprotective effects were evaluated *in vivo* on rats with determination of (liver function markers), AFP (tumor marker) and hematological profiles. Also, the intracellular MDA, GSH, CAT, and SOD levels were estimated in the rat liver tissue homogenate. The antioxidative activity was measured using DPPH radical scavenging assay. Results: Among the ninety fungi isolated from different marine sources, *Penicillium* represents more than 50% of the isolated fungal colonies followed by *Aspergillus* (30%) and *Fusarium* (14.4%). In this study, the protective effects of the tested fungal secondary metabolites were *in vitro* evaluated against CCl₄ induced HepG2 cytotoxicity. Incubating HepG2 cells with CCl₄ caused a significant loss in the cell viability. Treatment with the tested fungal metabolites resulted in a dose-dependent increase in cell viability. In the current study, fungal secondary metabolites showed protection in rats against hepatic lipid peroxidation and preserved GSH levels and activities of antioxidant enzymes namely, catalase (CAT), and superoxide dismutase (SOD). Conclusion: The results showed that the tested fungal metabolites had potent cytoprotective effect against oxidative damage induced by CCl₄ in HepG2 cells and rats liver, thus suggesting their first time discovered potential use as liver protectant.