

Abstract 56 – Paper ID: 078**Hepato-protective assessment study of *Hydrous indicus* and *Gryllotalpa orientalis*, the highly consumed edible insects of Manipur, North-eastern states of India**

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Abstract

This study presents the first hepatoprotective assessment of *Hydrous indicus* and *Gryllotalpa orientalis*, two commonly consumed edible insects of Manipur. The results reveal that *in vitro* cytotoxicity evaluation of the compounds–HepG2, *Gryllotalpa orientalis*, was found to be more effective than *Hydrous indicus*; *in vitro* hepato-protective effect of the compound/HepG2, the effect was not observed; in Super Oxide Dismutase Activity Assay (SOD), highest enzyme activity (SOD) was observed in *Hydrous indicus* when cells were exposed to sample *Hydrous indicus* only, and lowest enzyme activity (SOD) was observed when cells were exposed with *Gryllotalpa orientalis* (IC₅₀ dose) and H₂O₂, both with respect to control; in estimation of MDA content (TBARS assay), it was observed that *Hydrous indicus* treatment lowers MDA content, while *Gryllotalpa orientalis* and H₂O₂ treatments cause high oxidative stress; in estimation of reduced glutathione, highest reduced glutathione was estimated in *Hydrous indicus*, which provides stronger protection by maintaining higher GSH levels, whereas *Gryllotalpa orientalis* offers moderate protection, and both samples show reduced GSH under H₂O₂-induced stress. Further, both exhibited notable antioxidant activity in the CUPRAC assay, with *Gryllotalpa orientalis* being the more effective antioxidant source. The DPPH assay results reveal that both treatments exhibit minimal free radical scavenging activity, with the cell lysate + FC + H₂O₂ group showing the highest value (7.3%). In Lactate Dehydrogenase Activity, both samples show measurable LDH activity, with *Hydrous indicus* showing a stronger response than *Gryllotalpa orientalis*. In Alkaline Phosphate Activity, it was found to be observed in both the samples. Thus, the results of the study suggest that *Hydrous indicus* and *Gryllotalpa orientalis* were found to possess high hepato-protective properties and thus can be a big help in treating liver disease in future India.

Keywords: Hepatoprotective, Liver and chronic disease, Modern medicine, Health and diseases, Food security, indigenous product