Hepatoprotective Effects of Palauan Medical Plants

Kitalong, C., Lee, J.S., Hattori, Masao
Institute of Natural Medicine, University of Toyama

Purpose
Palauan folk medicine has been a cornerstone for the survival of the secluded island population for centuries. As a result of the rather minute population of this equatorial island there have been few, if any, scientific studies on the efficacy of Palauan herbal medicines. In an attempt to initiate studies, we have begun initial extraction and biological screening on 25 Palauan medicinal plant extracts.

Method
Methanol extracts of 25 Palauan medicinal plants were screened for their hepatoprotective effects against carbon tetrachloride treated primary hepatocytes. Primary hepatocytes were collected from male Wistar rats (6-8 weeks) through modified 2 step collagenase perfusion method (seglan). Incubated hepatocytes were pretreated with crude extract prior to CCl₄ treatment. After 8 hours incubation with the toxin, supernatant of cell lysate was collected. The collected lysate was analyzed with LDH and GOT/GPT assay kits to ascertain the degree of cell injury as compared to blank and negative controls.

Results and Conclusion
Water extracts of the 25 plants’ leaves, at 5.0x10⁻³g/ml and 2.0 x 10⁻⁴g/ml of total well volume, were utilized in the current study, mimicking traditional preparations. The primary culture conditions, with respect to well volume/cell number, culture medium and incubation times, were standardized to validate results. Six plant species (Lygodium microphyllum, Premna obtusifolia, Hedvyaria korrorensis, Flacourtia rukam var. microesica, Manilkara udoido, and Phaleria nisidai) showed exceptional activity, palliating CCl₄ induced hepatic injury in a dose-dependent manner by reduction of Lactate dehydrogenase (LDH) levels, an enzyme released from damaged cells, and a concomitant reduction of GOT and GPT levels (AST & ALT), enzymes released primarily from damaged hepatocytes. These results provide a scientific basis for the therapeutic effects of Palauan medicinal plants.