Abstract No: BO-07 **Biological Sciences**

In-vitro anti-cancer and cytotoxic properties of aqueous seaweed extracts on BHK and HeLa cell lines

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Cancer is a major health problem all over the world. Seaweeds and its active compounds have shown their potent cytotoxicity against cancer cells opening new sights for the production of new therapeutics. This study was performed to determine the cytotoxic effect and anti-cancer activity of aqueous extracts of selected Sri Lankan seaweed species on cancer (HeLa) and normal (Baby Hamster Kidney fibroblasts, BHK) cell lines. In addition, seaweed species with potent anticancer effect against cancer cell line was investigated. Samples of *Ulva faciata* (SW 01), *Caulerpa racemosa* (SW 02), *Gracilaria corticata* (SW 03), *Sargassum illicifolium* (SW 15) and *Jania adhaereus* (SW 26) were collected from Northern, Southern and North Western coastal sites of Sri Lanka. Aqueous extracts of seaweeds were prepared by soaking dried, powdered seaweed samples in distilled water through a modified method. Cells were cultured in a 96-well plate in Roswell Park Memorial Institute (RPMI 1640) medium and after 24-hour incubation, cells were treated with different seaweed extracts. Tetrazolium (MTT) colorimetric assay (*in-vitro*) was carried out after 24-hour incubation to determine cytotoxicity and anticancer effects. Viability percentages and growth inhibition rates for both cell types and with controls were compared. It was found that the seaweed extracts from different species showed significantly variable responses against cancer and normal cell lines. All seaweed extracts showed significant cytotoxic effect on cancer (HeLa) cells.

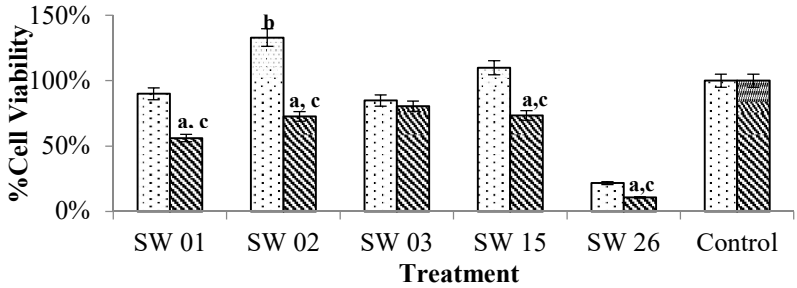

Figure 1: Cell viability percentage of normal cells (BHK, ⬚) and cancer cells (HeLa, ▨) in the presence of aqueous extracts of seaweeds. **a**, significantly different (P<0.05) from normal (BHK) cells; b, significantly different (P<0.05) from normal (BHK) cells control group; c, significantly different (P<0.05) from cancer (HeLa) cells control group. Bar represents the mean ±SE. A significant growth inhibition was observed for cancer (HeLa) cells by SW 01, SW 02, SW 15 and SW 26 in comparison to normal cells (BHK) and HeLa cells control group (Fig.1). Furthermore, SW 02 showed a significant growth promotion in normal cells compared with control. These data suggests that SW 01, SW 02, SW 15 and SW 26 has cytotoxic effect on cancer cells, whereas, SW 02 growth promotion on BHK cells, in addition. These data will

shed light on the presence of bioactive compounds in seaweeds that is important for anti-cancer therapy. Further studies will be focused on cytotoxic effect and anti-cancer properties of selected seaweed species on an animal model.

Keywords: Seaweed, Cytotoxicity, Anti-cancer, *in-vitro*

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Abstract No: BP-08 **Biological Sciences**

Effects of kerosene and citronella oil on the worker ants of *Tetraponera rufonigra* Jerdon (Formicidae, Pseudomyrmecinae), a medically important ant species, in tropical Asia

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Serious medical conditions due to sudden outbreaks of *Tetraponera rufonigra* and increase of its stings in urban localities were reported recently in Sri Lanka. Control methods appropriate for suppressing *T. rufonigra* workers in such situations were investigated using kerosene or citronella oil in the laboratory. Toxicity tests were conducted with appropriate control experiments and in three replicates, by applying 10 µl, 12 µl, 14 µl, 16 µl, 18 µl and 20 µl of citronella oil on dorsal prothorax of each of the acclimatized ten workers used in each treatment. Number of dead ants observed with each treatment was recorded after 10 minutes of each application. Probit analysis performed with the percentage mortality of workers resulted 6.38 mg/mg body weight of ant of citronella oil as LD_{99} of the workers.

For field simulating experiments, citronella oil containing (100%) sprayer bottle and a common hand sprayer were bought and spray volume of each sprayer was calculated. Increasing volumes 0.6 ml, 1.2 ml, 1.8 ml, 2.4 ml and 3.0 ml of kerosene or 0.64 ml, 1.28 ml, 2.56 ml, 3.84 ml and 5.18 ml citronella oil based on the calculated spray volumes, were applied separately to ten acclimatized workers in a plastic bottle in three replicates; time period until ten worker ants died since spraying was recorded for each treatment. Appropriate control set up was maintained for each treatment. Spraying of 3.0 ml of kerosene or 5.2 ml of citronella oil, as minimum volumes, is recommended for the temporary suppression of ten worker ants.

Keywords: Arboreal ants, Kerosene, Citronella oil, Medically important ants, Ant control

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