ABSTRACT

It is becoming progressively more understandable that because of considerable off-target effects chemotherapeutic drugs are rapidly being re-investigated in combination with herbal products. Increasingly it is being recognized that nutrigenomics is gradually entering into the mainstream in-vitro analysis. Natural agents have shown notable potential to induce cell cycle arrest or apoptosis. This Study conducts to screen the antitumor efficacy of *Iyengaria* and *Sargassum* sp, against A549 lung cancer cell lines. Methanolic extract of both algal seaweeds was concentrated using a rotary evaporator and dissolved in DMSO. *In vitro* cytotoxic activity of both algal extracts (IME and SME) at various concentrations (50 µg/ml-1000 µg/ml) tested for antitumor effect against the A549 lung cancer cell lines using MTT assay. The consequences of results indicated that the %age of cell viability has been reduced with increased concentration, as evidenced by apoptosis. *Iyengaria* and *Sargassum* sp extract shows potent cytotoxic activity with IC_{50} of 365 µg/ml and 200 µg/ml against A549 lung cancer cell lines respectively. The difference in IC^{50} values of IME and SME extracts was very high but further increase in SME extract upto more than threefold in dose showed a cytostatic activity against A549 lung cancer cell line. The cell viability remains constant as 18.2% at 400 µg/ml to 700 µg/ml. Rather than SME extract the IME algal extract showed a rapid decline in the cell viability with 35 µg/ml increases in dose against A549 lung cancer cell line and the cell viability decreases from 50% to 18%. Similarly, further increase in IME algal concentration showed a dose dependent response rather than cytostatic as SME extract. But, at the final concentration the SME algal extract showed a significant decline in the cell viability which remains only 4.7%. IME algal extract antitumor efficacy at final concentration 1000 µg/ml was less effective than SME algal extract as cell viability remains 6%. Further research need to be explored for the successful application of *Iyengaria* and *Sargassum* sp as a potent therapeutic tool against different cancer cell lines.

Present data predicted that *Iyengaria* methanolic extract was showing better antitumor activity as dose dependent response and *Sargassum* methanolic extract also showing potent anticancer efficacy against A549 lung cancer cell lines but showing irregular response at the different doses. In this study SME algal extract was most

effective at 400 µg/ml concentrations while IME was showing its potent activity at drug concentration of 700µg/ml. The concentration was more than its counter part in other findings and it appears that the basic reason for that difference was because of using crude extract in the study. Besides, regarding to the number of A549 dead cells after exposing to the various fractions of algal extract determined that the cytostatic activity of the tested extract was more favorable comparing to its cytotoxic activity. In conclusion the both *Sargassum* and *Iyengaria* sp could be potential specimens for further studies on different cancer cell lines and in vivo antitumor assessment. It can be a new source for new antitumor agents for modern cancer therapy.