ISOLATION, NMR AND MALDI ANALYSIS OF BETA-GLUCAN FROM SPARASIS CRISPA WULFE AND ITS ANTI CANCER PROPERTY

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Abstract - Mushrooms have remained as a delicacy since ancient times but their therapeutic potential and the nutritive value has been explored in the recent past. Bioactive compounds have been isolated from many wild edible mushrooms with their unique health enhancing properties. In this backdrop a study was carried out in the Northern part of Kashmir Himalaya from 2014 to 2017 so as to document the sociobiology, culinary status and biochemical properties of some wild mushrooms. Sparasis crispa Wulfe was subjected to biochemical analysis and for isolation of bioactive compounds, where silica gel column Chromatography of methanolic extract of the wild mushroom resulted in the isolation of β-1, 3 glucan whose chemical structure was ascertained by NMR, mass spectroscopy and MALDI analysis. Anti-proliferative ability of the isolated pure compound was evaluated by MTT assay against the three cell lines MCF-7 (Human mammary carcinoma cells), A549 (Human lung adenocarcinoma epithelial cells) and HCT-116 (Human colon cancer cells). The compound effectively inhibit the growth of cancer cells and maximum anti-proliferative activity was observed at 125µg/ml concentration in all the three cell lines, but highest inhibition in cell growth was found in A549 cell line. Moreover, inhibition in cancer cell migration was performed by wound healing assay. It was found that the isolated compound was found to be effective in restricting the migration of A549 cells up to 30% than control at 125µg/ml concentration. Our results showed that the isolated pure compound obtained from Sparasis crispa Wulfe shows potential anticancer and anti metastatic activities.

Key words - Sparasis crispa, Kashmir Himalaya, NMR and MALDI analysis, cell metastasis.