ABSTRACT

Tridax procumbens and Lippia nodiflora are small herbs which have been identified as an important resource in traditional medicine. Their leaves are found to contain considerable amounts of alkaloids, flavonoids, glycosides and terpenoids compounds. The medicinal properties of Tridax procumbens and Lippia nodiflora have led to the isolation of two anticancer compounds from their leaves. The structures of the two anticancer compounds were characterized as lupeol and lippiacin by Infra Red, Mass Spectrum and Nuclear Magnetic Resonance studies. In vitro Cytotoxicity of lupeol and lippiacin compounds showed them as potential inhibitor of cell proliferation in the lung cancer cell. The compounds treated cell lines A-549 showed 85% decrease of cytoviability in MTT assay, and 44% & 56% of inhibition of cell proliferation using Brdu incorporation by the compounds lupeol and lippiacin. Morphological changes in human lung cancer cel A-549 were observed with ethidium bromide exhibiting apoptosis. Flow cytometry analysis after 24 and 48 hours revealed an increase of G0/G1 phase human lung cell population and decrease of S and G2/M phase cells (P < 0.05). The compounds treated cell lines exhibited DNA intercalating activity. The compounds treated cells exhibited DNA fragmentation (180bp cleavage) and RT PCR studies showed two fold increased mRNA expression of lupeol and lippiacin compounds treated cells. Biochemical studies on LDH enzyme activity and integrity of cell membrane revealed that the two compounds had inhibited LDH activity (50% & 60%) and the integrity of cell membrane was lost. The lupeol and lippiacin compounds also inhibited cyclooxygenase and (ADP-ribose) polymerase enzyme activity. The present study revealed that lupeol and lippiacin compounds exhibiting its cytotoxic potential on lung cancer cells by inducing apoptosis and could be effectively utilized as anticancer agents.

Key Words: Tridax procumbens and Lippia nodiflora; lung cancer cell; anticancer compounds; lupeol; lippiacin.