Effect of Methanolic Extracts of *Emilia sonchifolia* (Lilac tassel flower), *Ageratum conyzoides* (Billy goat weed) and *Mikania micrantha* (Bitter vine) on Protease Enzyme Inhibition

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According to previous studies, methanolic extracts of *Emilia sonchifolia, Ageratum conyzoides* and *Mikania micrantha* have shown significant antimicrobial activity against *Staphylococcus aureus.* But their mode of action on the microorganisms is still unknown. It is expected that these three plants may have acted as protease inhibitors in the respective microorganism. So in the present study, 40 g of shade dried leaves of each plants, *E sonchifolia, A. conyzoides* and *M. micrantha* were extracted using methanol and subsequently subjected to solvent-solvent partitioning using hexane, chloroform and ethyl acetate. Those fractions were evaporated to obtain concentrated fractions. Then these concentrated fractions were used to prepare four concentration gradients, such as: 250 μg ml^{-1}, 500 μg m1^{-1}, 750 μg m1^{-1} and 1000 μg m1^{-1} and tested against protease enzyme. The protease enzyme assay was carried out based on Kunitz method, using casein as the substrate. According to the results obtained, highest inhibitory percentage was shown by *E. sonchifolia.* Even though statistical output has shown a significant difference of inhibition percentage among the concentration gradient of the plant fractions used (p value = 0.000), the range of the values are narrowed from 83.8% and 93.5% only for all three plants. So the results do not confirm the protease inhibitory activity of the extracts of the selected plants. Protease inhibitors control the action of proteases that are vital for the growth and development of the organism. Therefore, the reason for the antimicrobial activity of the methanolic extracts of these plants may not be due to protease inhibitory reaction but due to some other reasons.

Keywords: Protease, Protease inhibitors

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