ABSTRACT

The anti-inflammatory action of *Anagallis arvensis* was investigated in the current study, which comprised *In-vitro* tests such as albumin denaturation, anti-proteinase activity, and membrane stabilization assays, as well as *In-vivo* investigation through paw edema assay. The current study was the first to test *A. arvensis'* anti-inflammatory capabilities against the conventional medication indomethacin.

The results in this study indicate that methanolic extract of *A. arvensis* has ability to stop the release of lytic enzyme that results in stability of the red blood cell membrane. At the concentration of 1 mg /ml maximum membrane stabilization by hypotonic induced haemolysis for plant extract was 82.3% and minimum red blood cell lysis was 17.7%. Percentage protection against heat induced haemolysis of erythrocytes in *A. arvensis* was protection against heat induced 55-34.1% at 1- 0.06 mg/ml concentration. Percentage haemolysis of erythrocyte in indomethacin was 48-34.2% at 1 - 0.06 mg/ml concentration.

Maximum protection against heat induced denaturation of proteins showed by the methanolic extract was 70.5% at concentration of 1mg/ml and the standard used for the reference for anti-inflammatory activity showed maximum protection of 79% at concentration of 1mg/ml. There is very little difference observed between the mean values of methanolic extract of *A. arvensis* and Indomethacin. The methanolic extract of *A. arvensis* whole plant showed significant anti-proteinase activity when studied at different concentrations. Maximum inhibition was 62.5 which was observed at 1 mg/ml for the methanolic plant extract. Indomethacin showed maximum inhibition of about 71% at 1 mg/ml. The results indicate that the effects of methanolic extract are very similar to that of standard drug indomethacin.

The assessment of *In-vivo* anti-inflammatory action of *A. arvensis* is done by the measurement of mean edema volume of hind paws of mice. The mean edema values for control, Indomethacin, plant extract prior to carrageenan induction and plant extract after induction of carrageenan for 0 to 3 hours are 0.41-0.484, 0.41 – 0.158, 0.41 – 0.154 and 0.402- 0.156 respectively. And from 0.5 to 3 hours, the percentage protection against edema in mice for indomethacin and two groups of plant extract are 10.2- 67.4%, 6.6- 68.2% and 15- 67.8%

respectively. The current study's findings will contribute to the improvement of the method for using botanicals as a medicinal agent. The results indicate that the methanolic extract of Anagallis arvensis shows slightly less anti-inflammatory potential as compared to the standard drug Indomethacin, but as being a natural plant, it has fewer side effects and will provide a safe and potent source for the production of natural anti-inflammatory drugs.