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Effects of Saffron Flower Stamen Hydro Alcoholic Extract on Chemical and Thermal Pain in Drosophila Melanogaster

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Background and Aim: Many studies have been done on natural compounds with analgesic properties. Saffron flower stamen potentially contains analgesic and anti-inflammatory compounds. This study was performed to evaluate the analgesic effect of saffron stamen hydro-alcoholic extract on thermal pain of Drosophila melanogaster adult (D.M.A) and thermal and chemical pain of Drosophila stage 3 larvae (S3L).

Methods: D.M.A had been fed in the culture contained 0.05, 0.1 and 0.2 g/lit saffron stamen hydro alcoholic extract (S.S.H.E) for 24h. Then the duration of tolerance response of D.MA on the hot plate different temperatures were determined (n=10). S3Ls were produced on the cultures and the intensity of thermal pain response (writhing on hot plate) at different temperatures and chemical pain (writhing method) at different concentrations of acetic acid were studied (n=8).

Results: S.S.H.E totally showed an analgesic effects at a concentration dependent manner. In thermal pain test the observed analgesic responses at 35°C and 0.2 g/lit S.S.H.E was higher than the control group ($P < 0.05$). The highest response to thermal tests in S3L were observed at 35°C for 0.1 and 0.2 g/lit S.S.H.E ($P < 0.05$) and at chemical pain test for 0.2 g/lit S.S.H.E ($P < 0.05$).

Conclusion: It seems that components of saffron stamen has potential anti-depressant, anti-inflammatory and analgesic properties, of which are Monoterpenoids with potential analgesic, anti-oxidant and anti-inflammatory effects. Study of the Monoterpenoids effects on voltage-dependent Tvrp, NMDA and sodium channels, inhibition of nitric-oxide production is suggested. Crucosantin and Isorhamnetin-3,4-diglucoside in the extract are also recommended for further investigation of their probable anti-inflammatory effect.

Keywords: Analgesic, Anti-inflammatory, Stage 3 larvae, Adult Drosophila melanogaster