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Hematological and plasma biochemical parameter responses of white Wistar rats received intraperitoneal injection of *Achilla Eriophora* essential oil

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Achillea Eriophora is one of the most important genera of the *Asteraceae* family. It has been proposed that different species of *Achillea Eriophora* have antimicrobial, antiallergic and antiinflammatory potential (Karabay-Yavasoglu *et al.*, 2007). This study was performed to elucidate the effect *Achillea Eriophora* essential oil (EO), provided by a solution of methanol-water (1:1), on hematological and blood biochemical parameters of white Wistar rats (n=36). Animals (body weight 233±13 g) were randomly assigned to three groups receiving intraperitoneal injection of 300 mg of the essential oil (diluted in 0.5 ml of saline) per kg body weight once per day for 1, 3 and 7 days. A control group of 18 rats received 0.5 ml of saline only. Rats were fed *ad libitum* a standard diet (5% fat, 23.5% crude protein and approx. 60% carbohydrate) and had free access to water. Blood samples were taken from the retro-orbital plexus one day after the last injection. Blood hematological and biochemical parameters were measured. Data were statistically analyzed using general linear models procedures of SAS software. The mean food intake of the experimental groups amounted to 22.6 g/d and no difference ($P>0.05$) among the groups were found. When administrated for 7 days, the EO caused a significant reduction ($P<0.05$) of the number of red blood cells (RBC), hematocrit (HCT) and hemoglobin (HB) compared with rats injected with saline alone [RBC ($\times 10^6$/ml): 5.52 and 8.2; HB (g/dl): 13.3 and 15.2; HCT (%): 44.6 and 47.1, respectively]. In rats injected with the EO, the total white blood cells (WBC) count increased significantly ($P<0.05$) compared with those of the control group (15.1×10^3 vs. 9.2×10^3, per ml). Rats receiving EO injections for 3 and 7 days had significantly elevated ($P< 0.05$) concentrations of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and urea compared with those in the 1 day injection protocol and the control groups [ALT (u/l): 81.0, 86.1 vs. 69.1, 68.81; AST (u/l):186.3, 192.0 vs. 163.9, 162.5 and urea (mg/dl): 27.8, 33.4 vs. 22.1, 21.4, respectively]. Rats receiving EO injections for 7 days exhibited a significant ($P<0.05$) reduction of body weight (from 235±14 to 212±11) that was not observed in animals of the control group (from 231±19 to 235±15). As indicated by the drop of RBC, HB and HCT, the 7 days injection of *Achillea Eriophora* EO to rats result in anemia and liver fiber destruction in rats. Bilirubin concentration was the same in animals from different groups. Therefore, the observed anemia could result from interruption of RBC production in bones. The rise in the number of WBC may result from liver necrosis which is confirmed by the increase in ALT and AST after long term injection of rats with the EO.

Karabay-Yavasoglu, U., Karamenderes, C., Baykan, S., Apaydın, S. 2007. Antinociceptive and anti-inflammatory activities and acute toxicity of *Achillea nobilis* subsp. *neilreichii* extract in mice and rats. *Pharm Biol,* 45: 162–168.

Achilla Eriophora; essential oils; blood, rat
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