

In vivo anti-inflammatory activity and chemical composition of Algerian pomegranate (*Punica granatum* L.)

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Abstract

Punica granatum L. is a plant widely used in traditional Algerian medicine to treat

digestive, inflammatory and painful diseases. The objective of the present study was to determine the phenolic, flavonoids, anthocyanin, hydrolyzable & condensed tannins, proanthocyanidin contents and to evaluate in vivo the anti-inflammatory activity of the methanolic and aqueous extracts of the peel of *Punica granatum* fruit. Doses of 250 and 500 mg/kg of methanolic and aqueous extracts were administered orally in carrageenan-induced paw edema in mice, using Diclofenac (50 mg/kg) as a standard drug. Increases in paw diameter were measured for 6 hours at a 1- hour interval. After that, the mice were scarified and the inflamed paw tissue was removed and subjected to histopathological study. The results of the methanolic (ME) and aqueous (AE) extracts showed a significant inhibition (***) $p < 0.001$ of the mouse paw edema in a dose-dependent manner after 6 hours of carrageenan injection, compared to the control group. The percentages of edema inhibition of methanolic and aqueous extracts at a dose of 500 mg/kg were 80.72% and 51.94%, respectively, after six hours. These results were confirmed by the histological study, thus showing the presence of a less intense inflammatory infiltrate compared to the control group where the inflammation was more pronounced thus proving that carrageenin did induce an inflammatory reaction. This study revealed that peel extracts of *Punica granatum* have significant anti-inflammatory activity, which could be explained by the presence of a large amount of phenolic compounds.

Key words: *Punica granatum*, Peel extracts, Anti-inflammatory, Mice, Phenolic compounds