



## The anti-inflammatory effects of *Allium ascalonicum* L. essential oil solution in carrageenan-induced acute inflammation model in mice

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### Abstract

Inflammation is an immune system response aiming to protect against harmful agents. However, when inflammation becomes prolonged and remains uncontrollable, it results in damage to tissues and organs. Therefore, regulating and inhibiting the inflammatory response is crucial for preventing tissue and organ damage. In the current study, the essential oil of shallot (*Allium ascalonicum* L.) was used to develop a natural therapy that is able to inhibit inflammation. In this study, a paw model of inflammation was conducted by injecting 0.025 ml of 1% carrageenan to create a paw inflammation model. Subsequently, for the anti-inflammation assay, the mice were treated with a topical product containing shallot essential oil and Tween-80 (S-solution) at two concentrations: 30% and 60% essential oil. The anti-inflammatory efficacy was evaluated based on the time required to reduce inflammation, as well as the red blood cells and white blood cell indices. Carrageenan successfully induced inflammation in 100% of the mice, with a survival rate of 100%. In the anti-inflammatory efficacy test, the 60% S-solution demonstrated superior effectiveness, completely resolving inflammation within 96 hours. Throughout the experiment, the red blood cell index ranged from 5.03 to  $8.08 \times 10^6$  cells/mm<sup>3</sup>, and the white blood cell index ranged from 5.92 to  $9.08 \times 10^3$  cells/mm<sup>3</sup>, both remaining within the study's established safe limits. Based on these results, it can be concluded that both concentrations of the S-solution (30% and 60% essential oil) exhibited anti-inflammatory effects, with the 60% formulation proving to be more effective.

**Keywords:** *Allium ascalonicum* L., anti-inflammatory, carrageenan, models of inflammation.