



## **Inhibition of Carrageenan-Induced acute Inflammation in mice by skin administration of a topical solution supplemented with essential oil extracts of shallots**

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### **Abstract**

Shallots (*Allium ascalonicum*), a common ground culinary ingredient in Vietnam, have been highlighted due to their high pharmacological efficacy. However, there is still little use for this characteristic in pharmaceutical cosmetics. The current study aimed to produce a novel topical solution supplemented with essential oil extracts from shallots (S-Solution) to enhance anti-inflammation efficiency. The essential oil was extracted from local shallots using steam distillation with a shallot-to-water ratio of 1:1 for more than 3 hours. The anti-inflammation effect of S-Solution (30% and 60%) in Tween-80 was evaluated in carrageenan-induced acute paw edema in mice (car-mice). A negative control group was treated with tween-80 or distilled water instead of the S-Solution, and a positive control group was provided diclofenac 100 mg/kg in under car-mice. The results showed that the injection of 1% carrageenan in the mouse paw caused the inflammation to last for more than 12 hours. The administration of both experimental groups, S-Solution 30%, and 60%, exhibited the suppression of the paw edema at administration times of 72 hours. A slight reduction in edema was observed in the case of controls (tween-80-appliedgroup: 19.63%, and water-applied group: 19.88%). Statistically, the percentage of edema reduction in the experimental groups was significantly higher than in the control groups (S-solution 30%: 30.83%, and S-solution 60%: 37.15%). Moreover, the anti-inflammation effect was significantly observed in the group applying S-solution 60% compared to other groups. Notably, the use of topical products during the test period did not affect the physiological or developmental indicators of the mice through the assessment of blood parameters, weight, and recording of the living characteristics. The findings of this study suggest that the S-solution used, especially 60%, can minimize acute inflammation and present positive contributions as anti-inflammation supplements.

**Keywords:** *Anti-inflammation, Edema, Shallot oil*