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Review article

Andaliman (*Zanthoxylum acanthopodium* DC.) a herbal medicine from North Sumatera, Indonesia: Phytochemical and pharmacological review

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**ABSTRACT**

Andaliman (*Z. acanthopodium* DC) is a kind of flowering plant that belongs to the Rutaceae family. The habitats are found in southwestern China (Guangxi, Guizhou, Sichuan, Tibet, and Yunnan), Bangladesh, Bhutan, northern India, and northeastern India (Assam, Manipal, Meghalaya, Nagaland, Sikkim, Uttar Pradesh, and West Bengal), Nepal, Laos, Burma, Vietnam, North Sumatra highlands, Peninsular Malaysia, and northern Thailand. Andaliman is indigenous to North Sumatra, more specifically the Tobo Samosir District, North Tapanuli, and the Deli region. The phytochemical investigation showed some terpenoids as well as other compounds such as alkaloids, flavonoids, glycosides, tannins, and saponins, but they have not been entirely identified. In Indonesia, the plant is employed both in the culinary industry as an additive for flavoring food and in the traditional medical system for treating various diseases. It was reported to possess antibacterial, antifungal, anti-inflammatory, anticancer, cardioprotective, hepatoprotective, nephroprotective, and wound healing properties, alongside other activities related to pregnancy that were tested *in vitro* and *in vivo*. The results of the investigation were based on previously published studies. This review serves as information and a summary, thereby making further exploration of Andaliman to be easier.

**1. Introduction**

Indonesia is a country rich in biodiversity with 30,000–40,000 plant species, out of which 2500–7500 are medicinal, whether native, introduced, wild, or cultivated species [1,2]. Moreover, their value has been recognized around the globe for centuries, as drugs and cosmetics, and used in both traditional and modern ways. The large demand for different types of plants produced as raw materials for modern and traditional medicine (herbs) leads to tremendous trade from local to international scales [3,4]. Indonesia ranked fourth as the world's main producer of medicinal plants. Despite possessing many herbal plants, their medicinal potential is not yet used fully [5,6].

One of the spices with an application limited to primary commodities is *Z. acanthopodium* DC. In the plant family Rutaceae, locally

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