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### ***REVIEW PEGAGAN (*Centella asiatica L*) SEBAGAI SEDIAAN PENYEMBUH LUKA***

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## LAMPIRAN

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# Review: The Utilization of Pegagan (*Centella Asiatica*) in Food Industry and Wound Healing Materials in Pharmaceutical

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**Abstract:** *Centella Asiatica L* is a plant that is commonly found in Indonesia, which is found in humid places and gets enough sunlight, for example in rice fields, the edges of ditches, meadows, and other humid places. The Pegagan plant has active compounds such as alkaloids, tannins, flavonoids, alkaloids, steroids, triterpenoids and there are bioactive groups namely steroids, triterpenoids, and saponins, these plants do not cause harmful side effects, low toxicity and can be digested in the body. Pegagan has long been used for food, skin diseases, improving digestive disorders, cleansing the blood, and increasing body resistance. The pharmacological effects of Pegagan itself are as anti-syphilis, anti-toxic, anti-infective, fever-reducing, urine laxative, anti-leprosy, overcoming stress, and can be used for female fertility. The content of triterpenoids in the Pegagan plant is the most important substance because it has the benefit of increasing mental function provides calming effect and is also useful for blood vessels, therefore it can launch blood circulation to the brain. Asiaticoside is part of the triterpenoid that can strengthen skin cells and can improve skin repair, as a natural antibiotic, stimulates blood cells and the immune system

**Keywords:** Food; Pegagan; Pharmaceutical; Wound

### 1. Introduction

In Indonesia, there are millions of plant species that have properties for healing from various diseases and are also useful for human health[1]. One of the plants that grow wild without human influence is Pegagan/ Gotu Kola. Pegagan has the scientific name *Centella asiatica*. Pegagan is a wild plant that grows anywhere and can be used for herbal medicine because it is known for its efficacy and healing of disease[2]. Pegagan has long been used and utilized in the form of dry, fresh, and in the form of ingredients[3].

*Centella Asiatica L* is a plant that is commonly found in Indonesia, which is found in humid places and gets enough sunlight, for example in rice fields, the edges of ditches, meadows, and other humid places[4]. Pegagan has long been used for skin diseases, improving digestive disorders, cleansing the blood, and increasing body resistance. The pharmacological effects of Pegagan itself are as anti-syphilis, anti-senile, anti-toxic, anti-infective, fever-reducing, urine laxative, anti-leprosy, overcoming stress, and can be used for female fertility. The taste of Pegagan is sweet and has a cool nature[5].

*Centella Asiatica L* can be used from the whole plant as medicine. The leaves of this plant are well known as a very powerful wound healer. In China, Pegagan has long been used for the treatment of skin diseases, which is used topically. Ayurvedic medicine in India, the Pegagan plant is used as an ingredient of antiepileptic syrup, Pegagan is also used in India and Thailand as a tonic and treats dysentery. It is also used to add breast milk and in Pegagan leaf extract it is used as an ingredient against semility in Vietnam[6]. The content in Pegagan in the form of Asiaticoside and Madecassoside acid functions to increase proliferation,

angiogenesis, collagen synthesis, and epithelialization in the injured part[7].

The Pegagan plant has active compounds such as alkaloids, tannins, flavonoids, alkaloids, steroids, triterpenoids and there are bioactive groups namely steroids, triterpenoids, and saponins, these plants do not cause harmful side effects, low toxicity and can be digested in the body. The content of triterpenoids in the Pegagan plant is the most important substance because it has the benefit of increasing mental function provides a calming effect and is also useful for blood vessels, therefore it can launch blood circulation to the brain. Asiaticoside is part of the triterpenoid that can strengthen skin cells and can improve skin repair, as a natural antibiotic, stimulates blood cells and the immune system[8].

Wounds are the destruction of several body tissues, and one of the ways to heal wounds is using medicinal plants, one of which is Pegagan (*Centella Asiatica L*), there are several causes of injuries such as sharp or blunt cuts, temperature changes, chemicals, explosions, electric shocks, or animal bites, and most people use it to help heal wounds, namely the use of antiseptics [9]. The process in wound healing is a process that will occur in living things that are injured, the body's mechanism will immediately return the components of damaged body tissues and will form new components which are the same as before in accordance with the wound healing phase[10]. By looking at these things, the purpose of this is to provide information about various dosage forms of Pegagan as a wound healer.

From the information above, it is important to explore the potential of several research results on Pegagan (*Centella Asiatica L*) in the food and pharmaceutical industries, especially in wound healing preparations.

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### Review:Pegagan (*Centella asiatica L*) as a Potential Wound Healing Preparation

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#### Abstract:

**Background:** Pegagan (*Centella asiatica L*) is also known as Gotu Kola. *Centella asiatica (L.) Urb* belongs to the order Apiales and the genus *Centella L.* (Integrated Taxonomic Information). Asiaticoside and madecassoside acid contained in pegagan function as epithelialization of the injured area. Pegagan contains alkaloids, tannins, flavonoids, alkaloids, steroids, and triterpenoids. This plant is also known to have low toxicity and can be digested in the body. Pegagan is often used for wound healing. Many studies and commercial products use pegagan as a wound healer. The purpose of this journal review is to provide information about various dosage forms of pegagan (*Centella asiatica*) as a wound-healing preparation by describing the benefits of pegagan, the active compound content, activities and preparations of pegagan in the pharmaceutical field as well as the determination of the active compound asiaticoside pegagan.

**Key Word:** Pain; Pegagan; Wound.

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#### I. Introduction

*Centella asiatica (L.) Urb* belongs to the order Apiales and the genus *Centella L.* (Integrated Taxonomic Information). Asiaticoside and madecassoside acid contained in pegagan function as epithelialization in the injured part<sup>1</sup>. Pegagan has potential because all parts of it can be used for open wounds, burns, treatment of keloids, leg ulcers, phlebitis, scleroderma, lupus, leprosy, cellulitis, and canker sores<sup>2</sup>. Pegagan is also widely used in pharmaceutical and non-pharmaceutical preparations.

#### Active compounds of Pegagan

There are lots of active compounds contained in the pegagan herb and each of the active compounds has a variety of activities.

**Tabel no 1:** Active Compounds of Pegagan

Reference	Active compounds	Activities
4	saponins	Antibacterial
4	Alkaloids	Antidiabetic
5	flavonoids	Antihyperuricemia
6	triterpenoids	Wound healing, antioxidant
7	Steroids	Antibacterial

The pegagan plant contains lots of active compounds such as saponins that act as an antibacterial against the growth of *streptococcus mutans* bacteria. Saponins play a role in increasing the permeability of cell membranes which can change the structure and function of the membrane of *Streptococcus mutans* bacteria. Saponins can interfere with the ability of bacteria to interact with membranes. The content of saponins that are effective against *Streptococcus mutans* bacteria is 80%<sup>3</sup>. The alkaloids in pegagan have an antidiabetic activity that can reduce blood glucose levels and play a role in inhibiting glucose absorption in the intestine and increasing glucose transport in the blood. The concentration of pegagan used containing alkaloids is 40%<sup>4</sup>. Flavonoids are one of the compounds in pegagan which have activity as anti-hyperuricemia. The flavonoids contained quercetin and kaempferol which functioned as lowering uric acid in the blood in a study<sup>5</sup>, using 70% ethanol extract of pegagan. Triterpenoids help wound healing wherein these triterpenoids there are asiaticoside compounds that play an important role in the skin to strengthen skin cells and smooth blood flow. Triterpenoids are also used as anti-leprosy drugs<sup>6</sup>. Steroids have antibacterial activity that can inhibit the growth of *Staphylococcus aureus* bacteria which can damage bacterial cell membranes and at concentrations of pegagan 60%,80%,100%<sup>7</sup>.

**Lampiran 5. Hasil Cek plagiarisme**