A Review on Antidiarrhoeal, Anti-inflammatory and Antibacterial activity of *Adenanthera pavonina* leaves

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**Abstract**

Plants have been used for health care and medical purposes for years. The number of higher plant species on earth is about 250000. It is estimated that 35000 to 70000 species have, at one time or another, been used in some cultures for medicinal purposes. One of these is *Adenanthera pavonina* which is traditionally used. It also exhibit activity like antidiabetic, antibacterial, cytotoxicity, antifungal, antioxidant, anthelmintic, analgesic, anticonvulsant, depressant, and anti-inflammatory activity. The ethanolic extract of leaves show anti-inflammatory activity and pavonin a five membered lactone ring was isolated from leaves. The purpose of my review is to carry out future work for higher studies.

**Keywords:** *Adenanthera pavonina*, Antidiarrhoeal Activity, Anti-inflammatory Activity, Antibacterial Activity.

1. Introduction

*Adenanthera pavonina* is prereninal and non climbing species of leguminous tree. It includes food and drink. This tree is useful for nitrogen fixation. The raw seed are toxic, but may be eaten, when cooked. *Adenanthera pavonina* belong to family, Minosaceae. Powdered *Adenanthera pavonina* seeds are used as red pigment. The seeds require scarification and boiling in water for about one minute for successful germination.

2. Description about the plant

Figure 1: *Adenanthera pavonina* Linn.
2.1 Botanical Description

*Adenanthera pavonina* is a deciduous tree that reaches 60 m in height and up to 45 cm d.b.h. The trunk is basically straight with smooth bark and many fissures. The spreading crown has relatively few leaves. The leaves are bipinnate and 30 to 60 cm long with numerous oblong leaflets that are rounded on both ends and have a small point at the apex.

**Stem**
Deciduous; leafless for a period in July-August. Blaze odour resembling that of beans (*Phaseolus vulgaris*).

**Leaves**
Leaflet blades about 2.5 x 0.7-2.5 cm, leaflet stalks short, about 0.1-0.2 cm. Compound leaf axis channelled on the upper surface.

**Flowers**
Corolla about 4 mm long. Staminal filaments about 4 mm long. Anther apex aristate (with a stalked gland). Ovules about 12.

**Fruit**
Pods about 22 x 1.6 cm. Seeds quite hard. Testa shiny red.

**Seedlings**
Cotyledons erect, fleshy, obviolate, about 10-12 x 8-9 mm. At the tenth leaf stage: leaflet blades elliptic, apex mucronate, base oblique or obtuse; stipules very References 59 small, visible only with a lens. A number of very small red glands visible on very young growth at all stages.

2.2 Distribution

**Native:** China, India.

**Exotic:** Australia, Brunei, Cambodia, Cuba, Dominica, Haiti, Indonesia, Jamaica, Japan, Kenya, Laos, Malaysia, Myanmar, Puerto Rico, Solomon Islands, Sri Lanka, Taiwan, Province of China, Tanzania, Thailand, United States of America, Vietnam.

2.3 Cultivation

**Altitude:**
Up to 300-400 m, mean annual rainfall: 3000-5000 mm. Soil type: Found on a variety of soils from deep, well-drained to shallow and rocky, this tree prefers neutral to slightly acidic soils.

2.4 Chemical Constituents

This is a source of aliphatic natural product, carbohydrate, simple aromatic natural product, flavonoids, terpenoids, amino acid, peptide and alkaloids.

2.5 Medicinal Uses

The plant is reported to have a wide range of biological activities, such as astringent and styptic (used in diarrhoea, haemorrhage from the stomach, haematuria), anti-inflammatory (in rheumatic affections, gout) [1]. Seeds are anticephalgic and are also used for the treatment of paralysis. Traditionally, the ground seed is widely used for the treatment of various human ailments such as treatment of boils, inflammation, blood disorders, arthritis, rheumatism, cholera, paralysis, epilepsy, convulsion, spasm and indigestion.

3. Pharmacological Activities

3.1 Anti-inflammatory Activity

Mayuren C et al [2] in 2009 studied Anti-inflammatory activity of ethanol leaf extracts from *Adenanthera pavonina* (L) in rats. Ethanol extracts from the leaves of *Adenanthera pavonina* were assessed at doses of 250 and 500 mg/kg for anti-inflammatory effects using both acute and chronic inflammatory models. It was found that the doses possessed inhibitory effects on the acute phase of inflammation as seen in carrageenan-induced hind paw edema as well as in a subacute study of cotton pellet-induced granuloma formation.

Olajide et al [3] in 2004 studied Anti-inflammatory studies on *Adenanthera pavonina* seed extract. A methanol extract of the seeds of *Adenanthera pavonina* was evaluated for pharmacological effects in animal models. The extract (50-200 mg/kg) produced statistically significant (P < 0.05) inhibition of the carrageenan-induced paw oedema in the rat, as well as the acetic-acid-induced vascular permeability in mice. At doses of 100 and 200 mg/kg, pleurisy induced with carrageenan was also inhibited.

3.2 Antibacterial Activity

Dholvitakuhn A et al [4] in 2012 studied antibacterial activity of three medicinal Thai plants against Campylobacter jejuni and other food borne pathogens. Leaves of *Adenanthera pavonina*, *Moringa oleifera* and *Annonas quamosa* are used in traditional Thai medicine to treat dysentery and other diseases. This study investigated the antibacterial activity of these plants against six species of food borne pathogen. Methods and solvents employed to extract active constituents were optimised using the disc diffusion assay. Phytochemical analysis of the optimised extracts was performed by thin layer chromatography (TLC). Minimum inhibitory concentrations (MICs) and minimum bactericidal concentrations (MBCs) were determined by broth microdilution. A. pavonina contained flavonoids, terpenes and tannins, and was the most active extract against Campylobacter jejuni, inhibiting growth at 62.5 - 125 microgram/ml.

3.3 Antidiarroheal Activity

Burkill in 1966 and Balogun et al in 2000 studied that ground seed is widely used for the treatment of various human ailments such as treatment of boils, inflammation, blood disorders, arthritis, rheumatism, cholera, paralysis, epilepsy and has antidiarroheal effect [1].
4. Conclusion

This is an important medicinal plant having traditional importance as it is used in the indigenous system of medicines. Traditional practices are proven by various experimental and scientific studies. This depicts the plant with tremendous potential in both healthcare and trade. Considerable work has been done to explore the biological activity and medicinal applications of the plant, still there are available countless possibilities of pharmacological applications which needs to be explored.

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Reference


