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## Review Article

# Microscopical, Phytochemical Screening and Pharmacological Aspects of *Erythrina variegata* Seeds

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## ABSTRACT

The plant *Erythrina variegata* is traditional medicinal plant. Different parts of *Erythrina variegata* have used in traditional medicine as nervine sedative, febrifuge, anti-asthmatic and anti-epileptic. In some experiments it has potential effects for treatment of some disease like convulsion, fever, inflammation, bacterial infection, insomnia, helminthiasis, cough and wounds. The dried powdered seeds were treated with different solutions and observed calcium oxalate crystals, starch grains and trichome. The seeds were extract with two solvents such as ethanol and chloroform. Phytochemical screening studies were performed in ethanol extract and chloroform extract and detect various constituents such as alkaloids, tannins, flavonoids, steroids and triterpenoids.

## INTRODUCTION

Plants are the richest resource of drugs of traditional systems of medicine, modern medicines, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates and chemical entities for synthetic drugs. Most of the people in rural and urban areas of the world are dependent on the medicinal plants for the treatment of infectious diseases. Plant derived medicines are relatively safer than synthetic alternatives, offering profound therapeutic benefits and more affordable treatment.

Dietary phytochemicals are considered as an effective tool to cure body disorder. They play a important roles as therapeutic agents in prevention of many diseases. A growing body of evidence indicates that secondary plant metabolites play important roles in human health and may be nutritionally important.

The genus *Erythrina* comprises of about 110 species of trees and shrubs. It is typically found on sandy soil in littoral forest and sometimes in coastal forest up to 250m in elevation. Some of the species of this genus are rich in source of alkaloids and

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flavonoids, and certain species are used in traditional medicine for the treatment of several diseases.

The most attractive type, *var. variegata*, is grown for its variegated leaves, as well as its seasonal showy red flowers. *Erythrina variegata* has a very distribution in the tropics and has been introduced into the large number of countries through cultivation. *Erythrina variegata* is a multipurpose tree, often used in agroforestry systems. It can be lopped for fodder, as its foliage has a relatively high protein content that makes it an excellent feed for most livestock.

Different parts of *Erythrina variegata* have used in traditional medicine as nervine sedative, febrifuge, anti-asthmatic and anti-epileptic. In some experiments it has potential effects for treatment of some disease like convulsion, fever, inflammation, bacterial infection, insomnia, helminthiasis, cough and wounds. In siddha system, the seeds are used for the treatment of stomatitis, dysentery, sterility, diabetes and eye disorders. The entire plant and seeds are reported to possess antihypertensive, antimicrobial, sedative, immunosuppressive and anti-inflammatory properties.

#### PLANT PROFILE:

- Kingdom : Plantae
- Division : Magnoliophyta
- Class : Magnoliopsida
- Family : Fabaceae
- Subfamily : Papilionoideae
- Genus : *Erythrina* L – Coral tree
- Species : *Erythrina variegata* L.
- Scientific name : *Erythrina variegata var. orientalis*
- Tamil name : Kalyana murungai
- Common name : Coral tree/ Farhad
- Origin : Oriental regions



**Fig 1: Plant of *Erythrina variegata***



**Fig 2: Seeds of *Erythrina variegata***

#### MATERIALS AND METHODS:

##### Collection of seeds:

The seeds of *Erythrina variegata* were collected from the cultivator's farm present within Kancheepuram, authenticated by Dr. V. GANGADEVI, Ph.D., HOD, Department of Botany, Aringar Anna Govt Arts College, Cheyyar.

The seeds were collected from month of December 2024. The collected seeds were cleaned to dust the adhering particle and dried under the shade. The dried seeds was coarsely powdered by

means of mechanical grinder and the powder material was used for the extraction process.



**Fig 3: Collection of seeds**

#### **Macroscopical characters of seed:**

- Shape - Seeds are kidney shaped or oblong oval.
- Size - The seeds are approximately 1 to 2 cm in length and 0.5 to 1 cm in width.
- Color - The outer surface is bright red or dark purple to red or orange red or sometimes scarlet. Some seeds may have a black spot.
- Surface - The seed coat is smooth, glossy and hard.
- Texture - The seeds are hard and firm to touch due the tough seed coat.
- Taste - Bitter
- Odour - odourless.

The seeds are known to be toxic if consumed raw due to the presence of alkaloids.

#### **POWDER MICROSCOPY:**

Fine dried powdered seed sample was separately treated with different solutions i.e. aqueous saturated chloral hydrate, phloroglucinol in conc.HCl 0.02N iodine reagent and picric acid mounted on slides with 50% glycerin following a standard protocol and observed under the binocular compound microscope at 10x and 40x magnifications.

#### **PREPARATION OF EXTRACT:**

##### **Ethanol extract:**

25g of *Erythrina variegata* seeds were soaked in 250ml of ethanol for 7 days. After they were filtered by using Whatmann filter paper. The residue was evaporated under electrical water bath. The obtained extract was stored in refrigerator.

##### **Chloroform extract:**

For chloroform extraction the same ethanol extraction procedure was followed.

#### **PHYTOCHEMICAL SCREENING:**

Phytochemical screening was carried out on seed extracts using different solvents to identify the major natural chemical groups such as tannins, saponins, flavonoids, alkaloids, glycosides, terpenoids.

#### **PHARMACOLOGICAL ASPECTS:**

##### **Cardiovascular effect:**

For cardiovascular effects the intravenous administration of the extract at a dose, varying from 0.1-0.4 mg/kg produced a sharp and short-lived fall in BP in both cats and rats in acute experiments. The cats were sensitive as regards the hypotensive action than rats. On the isolated frog hearts, the extract has no action in smaller dose but at a dose of 5mg resulted complete but reversible block of the heart.

##### **Respiratory effect:**

In smaller doses, the extract did not affect the respiration in urethane treated guinea pigs but a higher dose the rate of respiration increased but there was no change in its amplitude. The effect generally persisted for 15-20 mins. At a very high

dose the respiration becomes shallow and, in some cases, even there was a short-lasting apnoea.

### CNS effect:

The extract was relatively non-toxic and the mice can tolerate a dose more than 500mg/kg, ip of the extract. For CNS activity the extract was administered at a dose of 80 mg/kg im. Pretreatment of mouse with the extract neither potentiated nor reduced the pentobarbitone induced sleeping time. Similarly, the extract failed to protect the mouse significantly from pentylenetetrazol induced convulsions.

### Effect on smooth muscles:

The extract produced a contraction of intestinal smooth muscle in isolated guineapig-ileum preparations at a dose of 1.3 g/ml, it is abolished by pretreating the ileum with diphenhydramine but not abolished by pretreatment with atropine.

### Effect on skeletal muscles:

The extract was failed to produce any response in isolated frog-rectus abdominis muscle and did not influence the acetyl choline induced contractions even with a dose upto 7.5 g/ml.

### Effect of hyperlipidemia:

The methanolic extract of seeds had reduced the cholesterol levels and as well as antioxidant in experimentally induced hyperlipidemic rats. Doses of 200 and 400 mg of the extract was evaluated for its effect on lipid profile, HMG-CoA reductase, and on antioxidant enzymes in high fat diet induced hyperlipidemia.

### Antioxidant activity:

The leaf, flower and seed extracts of *Erythrina variegata* was evaluated for antioxidant activity by

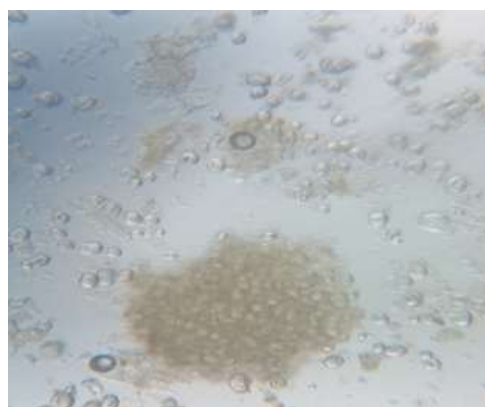
DPPH radical scavenging assay. The phytochemical analysis of leaf, flower and seed extract of *Erythrina variegata* revealed the presence of significant secondary metabolites such as steroids, quinines, cardiac glycosides, saponins, tannins, phenols, flavonoids, terpenoids and alkaloids.

## RESULTS AND DISCUSSION:

### Powder microscopy:



Starch grains



Trichome



Starch grains





**Trichome**



**Calcium oxalate crystals**



**CHEMICAL TEST:**

SR. NO.	CHEMICAL TEST	OBSERVATION	
		CHLOROFORM EXTRACT	ETHANOL EXTRACT
1.	Alkaloids		
	a) Dragendroff's reagent	+	+
	b) Mayer's reagent	+	+
	c) Hager's reagent	+	+
2.	Triterpenoids		
	Salkowski test	+	+
3.	Tannins		
	a) Ferric chloride test	+	+
	b) Lead acetate test	+	+
	c) Gelatin test	+	+
	d) Aqueous bromine test	+	+
4.	Saponins		
	Froth formation test	+	+
5.	Flavonoids		
	a) Ferric chloride test	+	+
	b) Alkaline reagent test	+	+
6.	Glycosides		
	a) Molisch test	+	+
	b) Conc.H <sub>2</sub> SO <sub>4</sub> test	+	+

## CONCLUSION:

In powder microscopy of dried seed powder exhibited calcium oxalate crystals, starch grains and trichomes. The ethanolic and chloroform extract of seeds of *Erythrina variegata* was significantly exhibited to various phytochemicals such as alkaloids, triterpenoids, steroids, saponins, flavonoids, glycosides, phenolic compounds were present. More studies are needed to elucidate final decision about the particular chemical constituent which is responsible for the various activity.

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## REFERENCES

1. Ajay kumar, Manmath Kumar Nandi, Brijesh Kumar, Ashutosh Kumar, Rajesh Kumar, Ambrish Kumar Singh, Manish Singh. Antiurolithiasis, Antioxidant, Anti-inflammatory, Analgesic and Diuretic activity of ethanolic extract of seeds of *Caesalpinia bonducella*. International Journal of Pharmaceutical investigation 2021; 11(3): 306-311.
2. Asmita. R. Suryawanshi, Sidheswar. S. Patil, S. J. Wakode, Bhagwat. N. Poul. A Brief Overview on *Erythrina variegata* . International journal of pharmacy and pharmaceutical research 2022; 24(3).
3. Balamurugan G, Shantha A. Effect of *Erythrina variegata* seed extract on hyperlipidemia elicited by high-fat diet in Wistar rats. Journal of Pharmacy and Bioallied sciences 2010; 2(4): 350-355.
4. Balamurugan V, Dhamotharan R and Sumathi E. Phytochemical screening and Antioxidant activities of leaf, flower and seed extracts of *Erythrina variegata* L. World journal of pharmaceutical research 2018; 7(9): 1623-1634.
5. Chatterjee G K, Gurman T K, Nag Chaudhury, A K and Paul S P. Preliminary pharmacological screening of *Erythrina variegata* var.orientalis seeds. Ind. J. Pharmacy, 11(2): 153-158.
6. Krishna Raju Mantena . V R, Tejaswini. Anti-inflammatory activity of *Erythrina variegata*. International Journal of Pharmacy and Pharmaceutical sciences 2015; 7(4).
7. Kumar. A, Lingadurai S, Jain A, Barman NR. *Erythrina variegata* Linn: A review on morphology, phytochemistry, and pharmacological aspects. Pharmacognosy reviews 2010; 4(8): 147-151.
8. Mohammed Z Rahman, Shirin J Sultana, Chowdary F Faruquee, Faisol Ferdous, Mohammad S Rahman, Mohammad S Islam, Mohammad A Rashid. Phytochemical and biological investigation of *Erythrina variegata* . Saudi Pharmaceutical journal 2007; 15(2).
9. Nagaraj Santhiya, Suriya Moorthy Priyanga, Subramaniam Hemmalakshmi, Kanakasabapathi Devaki. Phytochemical analysis, Anti-inflammatory activity, in vitro antidiabetic activity and GC-MS profile of *Erythrina variegata* L. bark .Journal of Applied Pharmaceutical Science 2016; 6(7): 147-155.
10. Preeti Kumari, Chandrawati Kumari. *Erythrina variegata* L. The Coral Tree: A Review. Journal of Medical science and Clinical Research 2017; 5(8): 26705-26715.



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