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## Medicinal Potentials of *Erythrina senegalensis*: A Review

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**Abstract** This paper gives a description of the botanical features of *E. senegalensis*; this plant is used by different localities as a remedy for several ailments in traditional medicine and its biological activities. Phytochemicals analysis from different parts of this plant showed presence of flavonoids, tannins, alkaloids, phenols, glycosides, terpenoids, amino acids and peptides. In traditional medicine, *E. senegalensis* have been used to treat ailments such as amenorrhea, jaundice, malaria, female sterility, pneumonia and a host of other ailments. Crude extracts of this plants which supports their use in traditional medicine are anti-plasmodium, antipyretic, antimicrobial, anti-inflammatory, antiviral, anticancer and analgesic activities.

**Keywords** *E. Senegalensis*, Phytochemicals, Biological activities, Traditional uses

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### Introduction

The genus *Erythrina* is comprised of about 290 species in the family, Fabaceae. Its species are distributed in the tropical and subtropical regions worldwide. They are trees growing up to 30m (90ft) high. Many species of *Erythrina* have bright red flowers and the growth of its branches look like the shape of sea coral [1]. *Erythrina* leaves are used as food plants by the larvae of some Lepidoptera species and many birds visit the nectar-rich *Erythrina* flowers and eat the seeds.

### Taxonomy of Plant

**Kingdom;** Plantae

**Phylum;** Tracheophyta

**Class;** Magnoliopsida

**Order;** Fabales

**Family;** Fabaceae

**Genus;** *Erythrina*

### *Erythrina senegalensis*

*E. senegalensis* is an ornamental plant that is commonly cultivated in West Africa and tropical and subtropical area of Senegal and Cameroon. It is a common tree in rural areas, planted for its medical uses and beauty, as well as for hedging. Its common name is coral flower.

It is a perennial tree growing up to 5-7m tall, rarely to 15m but the growth rate is mostly assumed to be between 5-15m tall. The branches and bark are rough and with slightly hooked spines measuring about 10mm long. The leaves



are made up of three leaflets, each measuring 5-15cm long and have thorny stalk. The flowers are bright red, 4-5cm long and are in large groups at the end of the branches, when the tree is leafless. The fruit is a slightly hairy pod, 7-15 by 1cm, bent, twisted and constricted between the flowers which are bright red [2].

### Geographical Location and Distribution of *E. senegalensis*

The plant is usually found in Senegal, Cameroon, Gambia, Nigeria, Guinea, Guinea- Bissau, Sierra Leone, Mali, Liberia, Ghana, Togo, Niger, Benin, Ivory Coast and Burkina Faso. Its habitat is wooded grassland, grassland with scattered trees, savanna.

### Uses of *E. senegalensis*

#### Medicinal uses/ ethno botany

In traditional medicine, the bark and leaves are used for dressing wounds. The bark and roots are used against stomach disorders and as a general tonic. In Gambia and Senegal, the leaves are crushed and the sap extracted and applied to wound for 2-3 days to aid healing [3]. In Ghana and Nigeria, the leaves are pounded and added to soup to help treat sterility/ barrenness [3]. In Cameroon and Nigeria, preparations are made from different parts of plant and used to bath the e body, used as fumigations or taken orally to treat Malaria, cough, pneumonia, fever, gastrointestinal disorders, snake bites, jaundice, nose bleeding, venereal diseases, etc [4], and the root infusion is used to relieve toothache in Nigeria [5]. A survey done in three different areas of Mali revealed that *E. senegalensis* is used by traditional healers to treat amenorrhea, malaria, jaundice, infections, body pains and used for abortions [6]. The Bamum populations of western Cameroon tribes' makes preparations from the stem bark and use it to treat liver disorder traditionally [4].

#### Other uses of *E. senegalensis*

*E. senegalensis* wood is used to make knife handles. The seeds are used to make necklaces and used as dumgame counters despite being poisonous. It is planted and used as ornamental and for hedging.

### Application of *E. senegalensis*

*E. senegalensis* is applied / administered in different localities, for different ailment and in different ways. In Guinea, the decoction of the bark is taken orally for female sterility treatment. In Senegal, sap from crushed leaves is applied externally to injuries to aid healing. Preparation from bark is taken orally against yellow fever. Decoction from the bark is taken orally against Bronchial disease. Preparation from twigs and leaves are taken orally to treat eye disorder and ulcers. In Nigeria, Preparation are made from the roots and taken for malaria [7].

#### Traditional and Current uses of *E. senegalensis*

Uses	Part	Region	Source
Dressing wounds	Bark, leaves	Gambia, Nigeria	
Female sterility	Bark, leaves	Gambia, Nigeria	
Cough	Unspecified	Mali, Cameroon, Nigeria	[3,4,5, 6,8,9,10, 11,12]
Pneumonia	Unspecified	Mali, Cameroon, Ghana	
Fever	Bark	Mali, Cameroon, Ghana	
Gastrointestinal disorder	Bark	Cameroon	
Snake bites			
Jaundice	leaves	Nigeria	
Anti-malaria	Unspecified	Mali	
	Roots	West African	



Liver disorder		countries
Amenorrhea	Stem bark	Cameroon
Ulcer	Unspecified	Mali
Venereal diseases	Twigs, leaves	Senegal
Infections and body pains	Twigs, leaves	Senegal
	Unspecified	Mali
Postpartum (women)	Bark	Guinea
Serious injury	Bark	Senegal
Yellow fever	Bark	Senegal
Bronchial diseases	Bark	Senegal
Eye disorders	Bark	Senegal
Injuries	Twigs and leaves	Senegal
Child abdominal pain	Bark	Mali

### Biological Activities

The biological activities and the parts of the plant responsible are stated thus:

Plant Part	Treatments	Source
Bark	Anti-bacterial	[8,10,13,14,15]
	Anti-viral	[8,10,13,14,15]
	Anti- Diabetic	[18]
	Anti-fungal	[8,19]
	Anti Malaria	[7]
	Anti-inflammatory	[5,6,8,19]
	Anti-tumor	[20]
Root	Anti Malaria	[8,21]
Leaves	Anti Malaria	[22,23]
Raiz	Antiviral	[24,25]

*E. senegalensis* showed strong anti-MRSA activity and is also strong against *Candida albicans* [26].

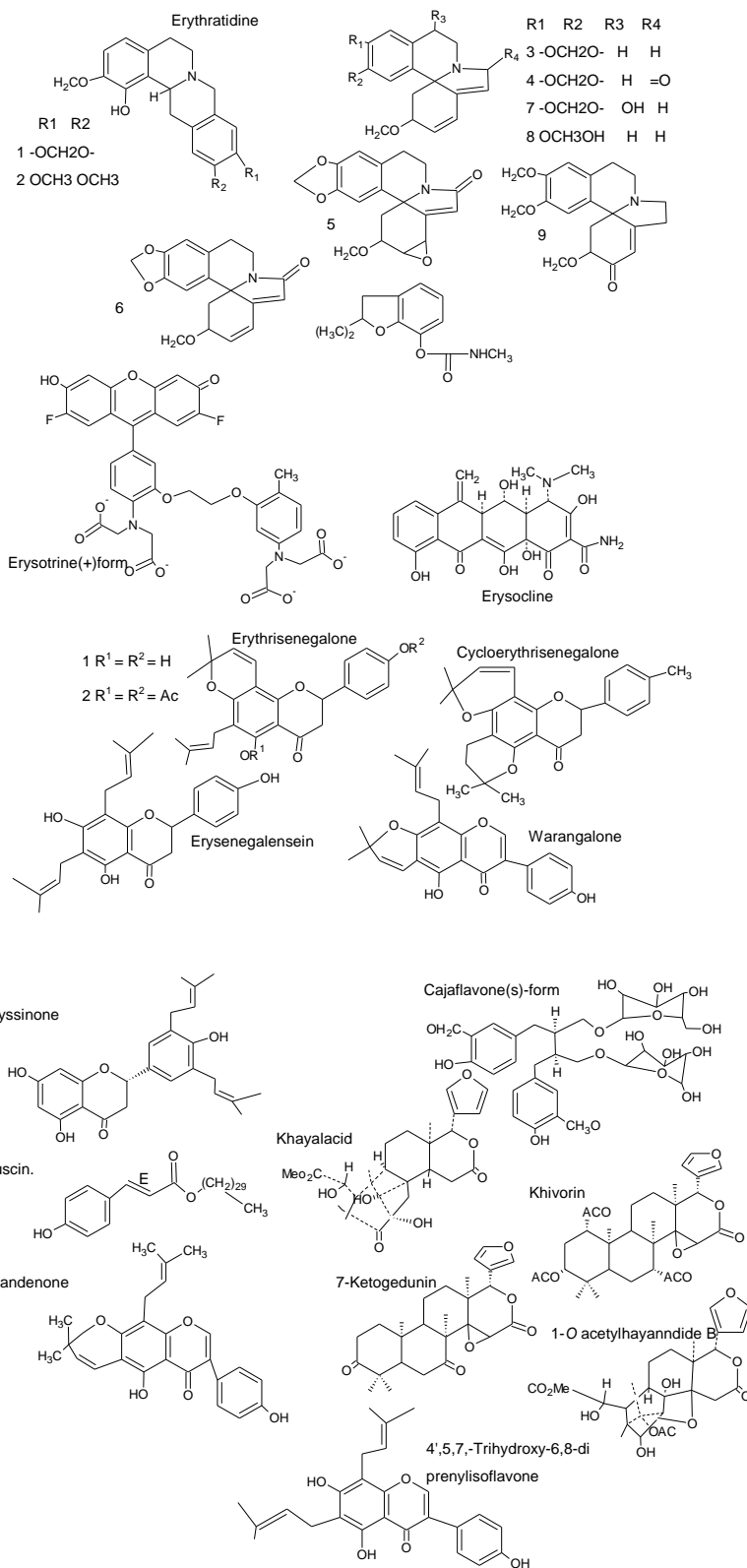
### Phytochemicals Attributes of *E. senegalensis*

Phytochemicals studies on *E. senegalensis* showed the presence of several bioactive compounds such as simple aromatic natural products, flavonoids, amino acids and peptide, terpenoids, glycosides, alkaloids, tannins, saponins, phenols which were extracted from different part of plant [4,27].

1. Simple Aromatic natural products (s) from the stem bark Defusing, Erythrinasinat, Octacosyl (E)-fenilate [27,6,]
2. Flavonoids from the stem bark  
Auriculatin, Caja flavonone (s) – form, 2,3-dihydroauriculation, Lonchocarpol A (s) – form, Scandenone, Erysenegalensein D, Erysenegalensein E, Erysenegalensein F, Erysenegalensein G, Ery senegalensein H, Erysenegalensein I, Erysenegalensein K, Erysenegalensein L, Erysenegalensein M, 4<sup>1</sup>,5,7-Trihydroxy-6,8 -Diprenylisoflavone, isoflavonoid 6,8-diprenylgenistein, Alpumisoflavone [27,6,].
3. Amino acids and peptides from the seed Hypaphorine (s)-form
4. Alkaloids from the seed Erysocline, Erysofine, Erysofine (+) –form, Erythratidine, 11- Hydroxyerysodine, 11- Hydroxyerysovine, 11-Oxyerysodine and glucoerysodine [27].



Structures of some compounds isolated from *E. senegalensis*



## Conclusion

This article on *E. senegalensis* shows the potentials of plants in treatment of microbial infections, malaria, and other ailments. Its natural bioactive substances could be a prospect in development of new therapeutic agents against infections caused by microbial MDR. Thus help to solve public health problems in West Africa [26]. The potential of the different Phytochemicals isolated and biological activities of the extracts of plants draws attention to its pharmacological potentials and positive impacts its use would have in developing countries due to unavailability of medicines and widespread drug resistance.

The purpose of this article is to stimulate and give attention to the compounds that are commonly found in the plants and other active agents from this specie to develop better drugs against microbial infections.

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