

Antioxidants from Jatropha Species and their Applications

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Abstract

Jatropha species are mostly cultivated in Asia South America, Africa especially in India, Braziletc region. Most important species of these plants are Jatropha curcus, Jatropha gossypifolia, and Jatropha multifida. All these species are rich sources of different phytochemical components, which have potential to treat several diseases including skin infection, wound infection, diabetes, cancer, heart problems, joints, problems, and many others.

Keywords: Jatropha species; Curcus; Gossypifolia; Multifida; Medicinal properties; Phytochemical component; Anti-oxidant properties

Introduction

The species of jatropha belongs to family of Euphorbiaceae. This plant possesses multiple functions. Different species are present in jatropha including Jatropha curcas, Jatropha gossypifolia, and Jatropha multifida. All these plants species have significant role in the cure & management of different health-related problems. These jatropha species are rich source of several pharmacological active components, which shows lots of medicinal properties. Jatropha curcas usually the growth of this specie seen in rainy areas because it possesses resistant to drought conditions. most cultivated areas of this species are Malaysia, Southeast Asia and Africa [1].

Usually, the presence of this plant is also seen on farms and it is used to give protection from grazing animals and stop erosion. Jatropha curcus due to its significant seed oil gained more importance in Malaysia. As we already discussed in many studies oxidative stress is not good for health it originates from a different illness that causes many problems. Free radical when exceeding their normal range then it causes dangerous effects on health and causes diabetes, cancer, cardiovascular problem, aging, and ischemia. Therefore, to reduce the chances of this illness role of anti-oxidant is good. Many plants and their extract are rich sources of antioxidant components. They contain flavonoids, phenolic components, flavonol, tocopherol, amines, amino acids, alkaloids, derivatives of chlorophyll, carotenoids, ascorbic acid & cinnamic acid all are good sources and prevent of diseases [2].

Jatropha curcus

The leaves of Jatropha curcus have rich medicinal charac-

teristics that's why it is used to treat different illnesses like rheumatism, arthritis, worm sores, jaundice, infection of the mouth, and fever [2]. The roots of this species are used as a decoction for the treatment of dysentery, scabies, ringworm, eczema, toothache and gum bleeding [3]. Jatropha curcas plant & their different parts seeds, root, and latex show notable anti-microbial, anti-inflammatory, anticancer and antioxidant properties [4,5]. The plants extract is a rich source of flavonoids and phenolic component that's why it shows anti-inflammatory, antioxidant and many other activities [6]. The other biological active component includes tannins, anthocyanins, and flavanols, which are significant against cardiovascular illness and reduced the risk of cancer [7]. The ethanolic & methanolic extracts of plants are effectively used to manage many health-related issues [8].



Jatropha gossypifolia

Jatropha gossypifolia is also an important species of *Jatropha* because of its rich medicinal properties. As this plant also possesses several medicinal active components which are effective against several illnesses. Mostly the part used for this plant is roots, bark, stem, leaves and fruit. All these parts are a rich source of secondary metabolites [9,10]. *Jatropha gossypifolia* is one of the best medicinal traditional plant shrubs used for the management of several skin illnesses, cancers and diabetes [11]. People in Nigeria preferably used the aqueous and leaf extract of *J. gossypifolia* to heal cancer of the mouth and reduced the bleeding of the nose and the stem of this plant is used to clean out the tooth [12,13]. Usually, Indian people prefer the leaves of this plant to cure itches, diarrhea, eczema, and dysentery [14]. For the cure of sores, inhibit the pain, and treat the wound decoction of *J. gossypifolia* is effective [15]. The *J. gossypifolia* phytochemical analysis shows that various parts of this plant alkaloids, flavonoids, phenolics, phytol, linalool, volatile oil and germacrene all are medicinally rich components [16]. These *Jatropha* species are effective against bacteria and viral infection featuring anti-microbial, antioxidant and anti-bacterial properties [17,18].



Conclusion

From all this discussion, it was concluded that *Jatropha* species are rich sources of different phytochemical components, which are actively used for the preparation of different drugs. People used the extract of this plant to manage acute and chronic problems. This plant species shows several properties including anti-oxidant, anti-inflammatory, anti-bacterial, anti-viral, anti-microbial & many more. These species are rich sources of flavonols, phenolic compounds, volatile oils, and secondary metabolites all are rich sources of medicinally active components.

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Jatropha multifida

The other name of this species is *multifidum adenopium* dominant by the name of a coral plant, physic nut and coral bush. *Jatropha multifida* is a small tree, with yellowish anthers present in red flowers that's why looks like coral, and seeds produce latex. The fruit of this plant is like a capsule it turns yellow when it is fully ripe. The height of this plant is 1.30 m to 7 m [19,20]. The suitable condition for the growth of these plants are under full sun, poorly fertilized soil, and tropical and semi-arid situation. Brazilian land is proper for cultivation [21]. *Jatropha multifida* possess lots of medicinal properties because of the presence of pharmacological active component, by using these components various products are formed. *Jatropha multifida* is originally Caribbean and Mexico plant therefore in other regions needs cultivation preventing invasion and destroying the local kinds [22]. By using the plant extract different medical illnesses are cured like skin problems, infections of the skin, ulcers, wounds, pain, and fever [23]. *Jatropha multifida* possess activities including immunomodulatory, analgesic, healing, gastro protective, antifungal, anti-inflammatory, anti-bacterial, anti-influenza, anti-melanin, anti-oxidant [24]. The ethanolic extract of this plant species is a rich source of anti-oxidant properties. The important chemical component of this plant includes polysaccharides, curcuminoids, stilbenes, tannins, flavonoids, lignans, coumarins, alkaloids, terpenes, di & triterpenes, and sesquiterpenes.

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