Review on Phytoconstituents and Pharmacological Activities of Leaves of *Ormocarpum cochinchinense*

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Several plants possess a variety of biologically active compounds. Among them *Ormocarpum cochinchinense*, belonging to the family Fabaceae is an important traditional plant, which potentially shows good effect in bone fracture healing. The objectives of this paper are categorized in 3 groups. First, reviewing the available literature on the potential health effects of *Ormocarpum cochinchinense*, second, providing an insight to the potential implications of the studies reviewed in the context of possible compounds and therapeutic applications in health management, and third, identifying the fields of interests for future researches.

**Key words:** *Ormocarpum cochinchinense*, flavonoids, alkaloids, betacyanin, antioxidant, antibacterial, antifungal, anticancer.

**INTRODUCTION**

**Botanical name:** *Ormocarpum cochinchinense*  
**Family:** Fabaceae,

Erect subshrubs. Leaves pinnately 10-13-foliolate; leaflets alternate, 2-3 x 1.2 cm, obovate-oblong; petiole slender; stipule ovate. Flowers in slender axillary, 6-10 cm long, racemes; bracts ovate; calyx 6 mm long, lobes ovate, acute, hairy; corolla 8 mm, long, pink; standard clawed, wings 5 x 4 mm, orbicular, auricled; stamens monadelphous, spitting later; ovary linear, many-ovuled, hispid. Pods 2-3 cm long, 1-4 jointed; joints oblong. (Sasidh. et al., 1996).

**Phytoconstituents**

Alkaloids, betacyanin, cardiac glycosides, flavonoids and saponins were present in the leaf extract of *Ormocarpum cochinchinense* (M. Pazhanisamy et al., 2013). According to (A. Hannah et al., 2016) alkaloids, flavonoids, tannins terpenoids, phenols, phytosterols, saponins were present in the leaf extract of *O. cochinchinense*. Sivakumar et al., 2013 research work indicates the presence of flavonoids, terpenoids, tannins, alkaloids, steroids, saponins, gums, resins, coumarins, glycosides, carbohydrates.

FT-IR vibrational bands confirmed that the fractions of *O. cochinchinense* had lots of biologically active compounds which include H–Bonded Phenols, alkanes, carboxylic acid, flavonoids, polyphenols, catechins, aromatics, and aliphatic amines (sivakumar et al., 2019).

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The level of calcium in the plant was found to be the reason for bone healing effect. So, the calcium in leaves extract and callus developed from leaves of *O. Cochinchinense* was examined. Result reveals that calcium in the leaves extract was high compared to callus extract (K.M. Maria John et al., 2011).

The Ag nanoparticles were synthesized from *Ormocarpum cochinchinense*. The particles synthesized were approximately 88 nm and the organic group responsible for the reduction was found to be alcohol. Varying concentrations of the nanoparticle in the bioscaffold suspension were experimented in the prepared freeze-dried scaffold and optimized (winny et al., 2016).

**PHARMACOLOGICAL ACTIVITY**

**Antimicrobial**

The highest antibacterial activity was due to abundant phenols and tannins whereas the maximum antifungal activity was due to presence of alkaloids in the leaves extract of *O. cochinchinense* (A. Hannah et al., 2016).

**Antioxidant**

The best antioxidant activity was due to presence of high amount of flavonoids, tannins and saponins (A. Hannah et al., 2016). M. Pazhanisamy et al., 2013 had proved a good antioxidant property up to a level of 73.4% in leaves extract of *O. cochinchinense*. Sivakumar et al., 2013 research work indicate the high antioxidant activity is due to rich amount of flavonoids, tannins, glycosides, saponins, coumerins and resin.

**Bone healing**

The histopathological study of bone tissue at the defected area/site was carried out by euthanizing the animals, each at the interval of 3 weeks postoperatively. However, there was a high elevation in the serum alkaline phosphatase level in all the animals and, it was clear that the level of Ca on the seventh day reduced, after which the serum Ca deposition increased. Inorganic phosphorus levels were increased on the seventh and fourteenth days of healing followed by a decrease to normal. Alkaline phosphatases were involved in bone formation and healing of fractures (Dineshkumar et al., 2013).

**Antimalarial**

In this research, silver nanoparticles (Ag NPs) were rapidly synthesized using the aqueous leaf extract of *Ormocarpum cochinchinense*. The acute toxicity of *O. cochinchinense* leaf extract and synthesized Ag NP was evaluated against larvae of the malaria vector *Anopheles stephensi*, the dengue vector *Aedes aegypti* and the filariasis vector *Culex quinquefasciatus*. Compared to the leaf aqueous extract, synthesized Ag NPs showed high toxicity against *A. stephensi*, *A. aegypti* and *C. quinquefasciatus*, with LC50 values of 10.43, 11.26 and 12.35 μg/mL, respectively. Synthesized Ag NPs were found safer to non-target mosquito predators *Diplonychus indicus* and *Gambusia affinis*, with LC50 values ranging from 522.13 to 637.70 μg/mL (MarimuthuGovindarajan et al., 2016).

**Anticancer**

The synthesis of crystalline CuO NPs from the leaf extract of *O. cochinchinense* were confirmed by various analytical techniques like UV-Vis, FT-IR, XRD, SEM, TEM and SAED pattern. Further the synthesized CuO NPs were screened for anticancer activity on human colon cancer cell lines (HCT-116) by MTT (3-(4,5-dimethyl-2-tiazolyl)-2,5-diphenyl-2-tetrazolium bromide) assay. The obtained result inferred that the synthesized CuO NPs demonstrated high anticancer cytotoxicity on human colon cancer cell lines (HCT-116) with IC50 value of 40μg/mL-1(Ghanavel V et al., 2017).

**RESULT AND DISCUSSION**

The leaves of *O. cochinchinense* contains active constituents such as alkaloids, betacyanin, cardiac glycosides, flavonoids, tannins, terpenoids, phenols, phytosterols and saponins. The highest antibacterial activity was due to abundant phenols and tannins whereas the maximum antifungal activity was due to presence of alkaloids. The best antioxidant activity was due to presence of high amount of flavonoids, tannins, glycosides, saponins, coumerins and resin. Rich amount of calcium is responsible for bone healing activity. Copper oxide nanoparticle is responsible for anticancer activity. Compared to the leaf aqueous extract, synthesized Ag NPs from the leaf showed high toxicity against mosquito predators.

**CONCLUSION**

Tradionally the leaves of *O. cochinchinense* was used in curing the bone fracture. This review helps to know active constituents present in the leaves and the compound responsible for curing the bone bone fracture. Further we can focuses on proper formulation from leaves of *O. cochinchinense* to cure the bone fracture.

**REFERENCE**


Winny Prasitha Felix ; P Muthu, 2016 “Bioscaffolds impregnated with Ormocarpum cochinchinense mediated Ag nanoparticles”, ICEEOT.

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