

Pharmacological Activities and Applications of *Phoenix pusilla*: A Mini Review

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Abstract: *Phoenix pusilla* is a family of *Arecaceae*. The plant is usually found in Tamil Nadu and Sri Lanka. It's commonly used for cure the fever and cough. That fruits are having a medicinal uses. This have a medicinal uses PP have the antimicrobial, antioxidant and etc., are studied. Plant are contain a biological compounds so its helps to medicinal uses. Saponin, flavonoids, Proteins and etc., are studied in phytochemical analysis. It's have anti diabetic activity also. NMR studies are to identify the antioxidant compounds. Different Chemical extraction is used to studies the biological compounds from the *Phoenix pusilla* plant.

Keywords: *Phoenix pusilla*, Anti-oxidant, Phytochemical analysis, Anti-microbial.

I. INTRODUCTION

Phoenix pusilla is a family of *Arecaceae*. This plant is found in South India and Sri Lanka. These plants are used for medicinal purposes. Ceylon Date Palm is used to cure fever, diabetes, cough, urinary tract infection. Root is used to toothbrushes and they have antimicrobial activity. This plant is used for pharmacological purposes. Leaves are used to make basket, sleeping mats, etc. The plants look like bush and they grow shortly. PP was studied in various fields. Phytochemical analysis was studied. These were done by different types of extraction methods. The antioxidant compound was identified using NMR spectroscopic. Phytochemical analysis is done by unripe fruits extraction. Qualitative and Quantitative studies are done in these *Phoenix pusilla* fruits. In this plant bioinformatics studies have also been done to do protein prediction. The plant has a high potential for antioxidant activity.



Fig. 1. Photograph showing *Phoenix pusilla* tree.

Shankar *et al*, 2014 a qualitative and quantitative analysis of various phyto-consistent screening in *Phoenix pusilla* unripe fruit using ethanolic extract. Ethanol was used as the solvent to extract the compounds from PP unripe fruits. Phytochemical analysis was done in this PPUF. Phenolic compound, Carbohydrates, flavonoids, protein, glycosides, saponins, steroids, amino acids, tannins are present in this ethanolic extract of *Phoenix pusilla* unripe fruits. Quantitative analysis showed that it is made up of primary metabolites and secondary metabolites. Primary metabolites are protein content, total carbohydrates content, lipid contents. Secondary metabolites compounds are phenolic content, flavonoid, tannins. Anti-Oxidant analysis was done using dietary antioxidant to determine the reducing power (Vitamin C) and determine the total antioxidant content (Vitamin E). (1-diphenyl-2-picrylhydrazyl) DPPH assay is used for analysis in this fruits. Inhibition activity is calculated in IC₅₀ value. The reducing absorbance was measured in 517 nm. The ethanolic extraction of PP fruits has a free radical scavenging activity. Peroxidation inhibition was also studied

which showed a positive result in the *Phoenix pusilla* plant. Thus the ethanolic extract of PPUF has flavonoids and Phenolic compounds. Also have antioxidant and free radical activity.

Antony *et al.*, 2018 an identification of antioxidant from *Phoenix pusilla* fruit using NMR techniques. Antioxidant Quercetin compound is present in *Phoenix pusilla*. The antioxidant compound was isolated from the extracts using thin-layer chromatography. The structure of antioxidant compound was analyzed using the NMR spectroscopy. BRUKER AMX400 MHz instruments were used for these experiments. Tetra Methyl Silane chemical is used as standard. Quercetin is identified by NMR studies. ¹H-NMR and ¹³C-NMR spectrum studied in alcoholic extraction of *Phoenix pusilla* plant. Phenol contents are present in this PP extract. So it does not affect the human body. It has anti radical activity. Quercetin is a highly free radical scavenging compound so it helps to reduce the health issues especially cancer.

Subrahmanya Bhat *et al.*, 2019 a characteristics of cellulosic fibre from *Phoenix pusilla* leaves as a potential reinforcement for polymeric composites. In this study, *Phoenix pusilla* fibre are treated with various chemicals for mechanical, chemical structure, thermal and morphology behavior analysis. Chemical analysis include (Fourier transform infrared spectrometry) FT-IR analysis, (X-ray diffraction) XRD analysis, Thermogravimetric analysis, (Differential Scanning calorimetry) DSC analysis, Tensile testing and (Surface morphological analysis) SEM analysis. Chemical analysis studies revealed cellulose content are high when compared to untreated *Phoenix pusilla* fibres. Hemicellulose and lignin content are less when compared to normal PPF. Chemical analysis helps to reduce the hydrophilic contents and increases the density of the PPF. FT-IR analysis peaks are studied. These studies revealed the carboxyl group and hydroxyl groups are eliminated in PPF. XRD analysis result implies high cellulose content. IC values are calculated. Thermogravimetric analysis is done to check thermal stability for different chemical NaOH, SA, BP, PP treated PPF. DSC analysis two endothermic peaks are observed in these studies. Tensile testing shows that NaOH treated fibre are effective in surface modification in comparison to all treated fibres. SEM analysis show that chemically treated fibre has more pores and oil, wax and impurities are not present. Rougher surfaces are improved. PPF are used as reinforcement polymer.

Bharathi *et al.*, 2019, Antidiabetics activity, Anti-Inflammatory using ethanol extraction of *Phoenix pusilla*. Antioxidant assay was done in *Phoenix pusilla* extract. Antioxidant assay was done using Hydrogen peroxide, Ferric reducing powder assay, DPPH, Superoxide, Beta carotene linoleic acid assay. These assays give a better result. Beta carotene linoleic acid assay gave the highest percentage (95.8%) of antioxidant activity. Superoxide radical scavenging is giving a better result. Ferric ions assay are effective in this plant extract. The presence of flavonoids increases the Antioxidant activity. *Phoenix pusilla* ethanolic extracts have inhibitory activity when tested using the alpha amylase inhibitory assay test. Alpha Amylase and Alpha Glycosidase both inhibitory assays show the presence of inhibitory activity in this plant. Anti-Inflammatory activity is done in Ethanolic extraction of *Phoenix pusilla*. HRBC membrane stabilization and Proteinase inhibitory activity both shows effective anti-inflammatory activity. Ethanol extraction of *Phoenix pusilla* showed antimicrobial, Anti Diabetic, Anti-inflammatory and Anti-oxidant properties too.

Anuradha *et al.*, 2019, Preliminary Phytochemical, microscopic analysis and metabolite profiling of *Phoenix pusilla* root. Ethanol is used for extraction of plant. The primary metabolites are studied in PP root extract. Carbohydrates are present in high quantities as revealed in the quantification analysis. Secondary metabolites analysis results reveals total phenolic contents are highly present in this plant extract. Physicochemical evaluation and characteristics are determined in bulk density, tapped density and Hauncer ratio are analyzed with these PP ethanolic extract. Heavy metal analysis revealed the negative result implying the absence of heavy metals. Transverse section roots are analyzed using two different thickness of the root. GC-MS analysis of the ethanolic extract revealed 96 biological compounds. *Phoenix pusilla* plant has lots of medicinal application and pharmacological activity.

II. CONCLUSIONS

Phoenix pusilla plant is an important candidate as far as its medicinal uses is concerned. This plant show good antimicrobial activity, antioxidant activity and etc. Ethanolic extraction of *Phoenix pusilla* root has shown the most effective antioxidant activity when compared with extracts using other solvents. PP plant has the anti-diabetic property which is one of the deadliest metabolic diseases. NMR analysis revealed the compounds that confer activity. *Phoenix pusilla* have lots of pharmacological properties and it has less to no toxic effect on the human body. *Phoenix pusilla* fibres are more effective in water absorption while effective in removing wax, oils and other impurities from water.

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