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Putranjiva

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ABSTRACT

the euphorbiaceous family includes the tropical asian evergreen tree putranjiva roxburghii wall putranjivaceae also known as putranjiva the evergreen putranjiva roxburghii tree has dioecious blossoms corky bark and drooping branches plants are essential to our everyday life because of their many purposes.

It is mostly used to produce a range of goods that improve our quality of life. The seeds and bark are used as an antidote for snake bites. Moreover, seed paste can be used to treat a wide range of conditions, such as elephantiasis, constipation, ophthalmic problems, semen problems, infertility, and female genital issues. The leaves are used to treat illness, aridity, phlegm, and skin disorders. They are especially helpful when treating rheumatism. Herbal, Ayurvedic, and Unani treatments are the main uses for leaf extracts and seed biooil.

Prince tree leaves, putranjiva roxburghii herb a natural antipyretic anti-inflammatory and antioxidant property. And that is how the people of the country lose their will to fight, and start worrying about their economy whilst haemorrhaging vital natural resources. Therefore, scientists always search to give another more effective solution for it. Here bio-diesel is use as bioresource which is a diesel substitute and its summon from petroleum. Nature is over exploited, our resources going to threat and although it will start to vanish slowly. It is our duty then to either stop as much or decrease this deprivation and also reduce the different threats cause by this type of depleted resources towards humankind in later generations. Hence, we could utilize what we have currently FIND a lot other.

KEYS-WORD :- Urbaan Waste, Putranjiva Roxburghii,Tripsin, bio-oil, antioxidant, anti-inflammatory, and antipyretic.

INTRODUCTION

Putranjiva roxburghii is one plant in the Euphorbiaceae family. This plant is widely distributed throughout Asia's tropical regions. Despite its many uses, the plant is still not as well-known as certain other plant materials, such as jatropha, eucalyptus, etc.

This plant is known as Putranjiva roxburghii, according to the renowned botanist Roxburgh, who discovered the discovery. [1.2,3,4]

It is also locally in India, Nepal, Thailand, Bangladesh, Indochina, Myanmar and Sri Lanka . Medicinally valued, Putranjiva roxburghii grows throughout India. The leaves are generally reproductive, bitter, refrigerant and astringent. The leaves are handy in the treatment of ailment, phlegm, skin illness, aridity, and also aids in curing rheumatism . The extracts of leaves and bio-oil extracted from seeds are primarily utilized in Ayurveda, herbal, and Unani drugs. Its leaves and fruits are used since ancient times to free the muscle sprain and cure arthralgia in Thai medicine and the total plant issued to treat sickness and hemorrhoids.

The women munch the nuts of Putranjiva orally to influence the birth of a male kid . Leaves oblong, simple, shining, dark green distantly rough. Fruits globose drupes, seed generally one. Kernelyielding glycosides, glucojiaputin, glucocochlearin, glucoputranjivin, and glucocleomin commonly consists of an essential oil with the flavour of isothiocyanate .[5,6,7,8,9]

Seeds are fresh and sour. It is ophthalmic emetic, anti-seditious, diuretic and aphrodisiac. It has been used for many conventional health applications such as treatment of mouth and stomach ulcers, hot swellings, small pox and also useful in burning sensation, ophthalmopathy, hyper .

The experiment was carried out with an objective to differentiate the ethanolic extract from the P. roxburghii in order to determine and establish the anti-incitive and antioxidant action of the ethanolic extract prepared from the leaves and shaft bark of P. roxburghii by employing different pharmacological activity simulations in mice.

Leaves, fruits and stones of fruits are administered in coldness and infections, also in sore affections . Putranjiva roxburghii grows in profuse amounts in the tropical regions of Asia. The kernel has a pungent smell with a yield of 0.5 percent.

The oil contains 2 butyl isothiocyanates and isopropyl as the major components and 2 methyl-butyl isothiocyanates in a very small amount. In additional, glucoside and glucocleomin are also present in the seed (kernels).

The fruitlet paste is the content of a very high amount of mannitol and little amount of a saponin glucoside with alkaloid which is also reported to be present in the stones of the seed case.

It has been researched that P. roxburghii oil kept the peanut seeds for six months since it possesses extreme toxicity towards insects and fungi without causing any harmful effects on seed dispersal, sapling growth, and overall plant health. Therefore, bio-oil is an effective herbal preservative for the peanut seeds against fungus as well as insect attacks while in stock .[10,11,12,13,14,15]

Putranjiva roxburghii–taxonomy

Trees are usually 25 to 28 meters tall, have straight pores, are whitish when young, and turn dark grey when mature. They usually have pendulous branches and cylindrical, tapering, brown, slender, and flossy sprigs.[16,17,18,19]

(fig. 1).

Fig. 1: Putranjiva tree

Leaf-stalk: 0.3 to 0.5 inches long, lean, glossy; plates of 2x25 inches, ovoid and elongated in shape, apex is little sharp, base sloping, dense tip; jagged like a saw with teeth pointing toward the apex, smooth, dusky green, coriaceous, and shining; contiguous 8-14 pairs of nerves, featherlike, slim and ascending, lofty, intercostal, and reticular.(fig.2) [20,21,22]

Fig. 2: Putranjiva leaves

Flowers—flowers having a single sex organ, tiny, yellow, and not hermaphrodite; Male flowers have fewer stalks and are 1.5–3 mm across in alar spikes; the pedicels are 3-6 mm long, the sepals are 4-6 mm long, square in shape, puberulent without cilia, rounded at the apex, and overlap or stack like scales or shingles; the stamens are 1.5–3 mm long, with thick fibrils that are roughly foot-oriented; they are borne on the stalk in ovate, hirsute Female flowers: alar and hermit; pedicle length: up to 20 mm. Fruit: Stone fruit with a 1.50-inch solitary seed. ellipsoidal and oval in shape, surrounded by densely tangled strings, and possessing a hard shell or crust; A little stem that is 0.4-6 inches long and has a single bloom. (fig. 3).[23,24,25,26]

Fig. 3: Putranjiva fruits

Utilizing putranjiva in a number of ways

As herbal preservative

Putranjiva oil is useful as a natural preservative in addition to being a biofuel. In order to preserve 250 grams of sissoo seeds, a study was conducted.For around six months, the sissoo seeds were preserved by the Putranjiva oil without experiencing any negative consequences. It had no negative effects on sapling development or seed incubation. While growing, it had no detrimental effects on the plant's structure or overall health.[27,28,29,30]

Therefore, it is clear that Putranjiva's seed kernel oil performed exceptionally well as a protective coating for sissoo seeds, demonstrating strong antifungal action against fungus and providing insect protection. Oil was also examined as an antifungal agent in a different study. In order to investigate the oil's fungus-toxic properties, a number of fungi were isolated from the root samples. Every experiment was run in duplicate and carried out five times.While other oils at the same dosage exhibit a very small level of fungal-toxic nature, Putranjiva oil demonstrated flawless toxicity in fully suppressing both test fungi during the toxicity assay at 600 ppm.[31,32,33,34]

At a dosage of 0.10 ml, putranjiva seed oil demonstrated remarkable repellency against the insect Bruchuspisorum; however, other oils did not exhibit the same degree of repellency. Putranjiva seed oil at 500 ppm reduced the mycelial development of ten fungus. Putraniva oil was also found to inhibit the growth of all ten discs with a 6 mm diameter and the single mycelia disc with the biggest diameter in that study, 12 mm. Thus, the antifungal latent in the oil appeared to have a high inoculant density. Six months of autoclaving at 100 °C did not alter the oil's antifungal qualities.[35,36,37]

In another investigation, it was shown that Putranjiva seed oil was fungicidal and showed significant toxicity at a minimum inhibitory concentration of 500 ppm. For six months*, the 260 ml container containing 250 grams of peanut seeds was completely shielded by 0.35 and 0.48 ml of Putranjiva oil.This preservation technique has no negative effects on the eidonomy of plants, seed germination, or seedling growth. Therefore, the Putranjiva seed oil demonstrated a strong herbal preservation propensity for controlling insect attacks on plants after harvest, even at low minimal inhibitory concentrations with long shell life.[38,39,40]

As trypsin inhibitor

Anion and cation exchange chromatography were used to purify the Putranjiva seeds to brinhomogeneity, yielding a highly potent, stable inhibitor. 'Sodium dodecyl sulphate-polyacrylamide gel electrophoresis' analysis under dipping conditions revealed that the protein included a single polypeptide chain with a molar mass of about 38 kilodaltons. Dense trypsin was inhibited at a 1:2 mole ratio by the purified inhibitor. Over a broad pH 2–16 range and a temperature range of 25–90 °C, the inhibitor maintained its repressive activity in a Dithiothreitol concentration of up to 100 mmol. The inhibitory properties of the stable inhibitor were lost at temperatures of 92 °C or above. During the cluster of determinants (CD) experiments, the inhibitor's structural stability was discovered at high temperatures.[41,42,43]

Cytotoxic activity

To test the plant's potential as a treatment for some fatal illnesses, such as cancer, the cytotoxic properties of a methanol extract made from Putranjiva roxburghii seeds were investigated. The extract was found to be harmful after demonstrating cytotoxic action in the Artemia (Brine shrimp) lethality experiment, with a lethal concentration of 433.88 µg/ml. The lethality test described above gives an idea of how inexpensive and simple this bioassay is for assessing the bioactivity of specific plant extracts. Thus, the study verified that Putranjiva seed extracts have strong antitumor and cytotoxic properties.[44,45]

Antifungal activities of putranjiva

putranjiva is a vital and calming part of eastern traditional unani and ayurvedic treatments which depend on the use of plant therapy for the bodys health it is commonly known that the healing process is thickened by the leaves in particular another study examined the crosslinking typing and recombinant technology of a new heterodimeric protein with a molecular weight of 14 kilodaltons from p roxburghii seeds in addition to those other probably edible qualities the seeds were shown to have antifungal rnase dnase and ex-vivo translational repressive capabilities.[46,47]

Hypoglycaemic activity

Some neurological conditions, including retinopathy, neuropathy, angiopathy, and nephropathy, were brought on by disruptions during the usage of glucose. Diabetes mellitus is the most common cause of all these serious diabetic illnesses. The glucose metabolic equilibrium is destroyed by this endocrine disease. The antidiabetic qualities of Putranjiva roxburghii have been recognized by numerous researchers. In a study that used alloxan monohydrate (C4H2N2O4) to produce diabetes in anomaly rat models, Putranjiva roxburghii's antidiabetic properties were tested. The purpose of the study was to demonstrate the hypoglycemic potential of Putranjiva roxburghii leaf ethanol extracts. On the fourth, seventh, and tenth days following the start of treatment, dosages of the ethanolic extract at 270 and 550 mg/kg demonstrated highly substantial anti-hyperglycemic efficacy.[48,49]

Other uses

As for the straight as well as the blended Putranjiva oil, they both can run the diesel engines superbly, as per the biodiesel reports. To sum up, the study indicates that bTDC timing biodiesel along with a 25 compression ratio can be the best choice for running a diesel engine. Not only is Putranijiva the major source, but also it can be a substitute for diesel in all those diesel-powered vehicles without any engine modification. A putranjiva type which is made from non-consumable ashes is said to be functional in all diesel engines. In the hilly regions, Putranjiva roxburghii oil which is non-edible, can act as a substitute for diesel during emergencies of fuel, as it does not require tuning the engine.[50,51]

The 30% blends of pure Putranjiva oil and diesel cut down the emissions like NOx, smoke, CO, and particulates, etc. The performance parameters like BTE (brake thermal efficiency) and BSFC are, in fact, comparable to that of diesel fuel. At more than 30% blend, the characteristics mentioned above have shown lesser effectiveness. Hence, it is clearly observable that Putranjiva oil blend can be a substitute for fossil-diesel in a suitable way to run diesel engines with lower emissions, which are really a profit in case of environmental impacts on the human beings.1 Kernels are orally taken by sterile ladies to influence the formation and thus, the birth of a boy is guaranteed.[52,53]

CONCLUSION

This review summarizes the full extent of the P. Putranjiva, economically important tree species, that could grow in a sustainable manner. One of its stresses the dimensions of the medicinal value and the commercial usage of Putranjiva like Bio-fuel. Putranjiva has been referenced as one of the Biofuels, Herbal preservative, Trypsin Inhibitor, Antifungal, Antipyretic, and Anti-diabetic agent. The resulting studies can proceed in this species in particular with the bark where the possible extracts with unique thrust in treatment or else in commerce may be offered. However, not only as a newly emerged species, but a decorative one can be dominate in urban gardens as along with the outplay of the functional side as in the ecological service value of Putranjiva roxburghii. Putranjiva grows as a near giant as the banyan tree due being a most compatible nurse tree suppressing all other species giving dense cools and shadows.[54,55]

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