An Overview of Acacia catechu

Article · August 2021

CITATION
1

READS
1,062

5 authors, including:

Sandeep Rout
Sri Sri University
335 PUBLICATIONS **496** CITATIONS
SEE PROFILE

Gyanaranjan Sahoo
Orissa University of Agriculture & Technology
93 PUBLICATIONS **151** CITATIONS
SEE PROFILE

Udit Nandan Mishra
Sri Sri University
54 PUBLICATIONS **245** CITATIONS
SEE PROFILE

Ashish Sheera
Sher-e-Kashmir University of Agricultural Sciences and Technology Jammu
31 PUBLICATIONS **50** CITATIONS
SEE PROFILE

Biotica Research Today

Vol 3:8 691/693

2021

An Overview of *Acacia catechu*

Sandeep Rout[1*], Gyanaranjan Sahoo[2], Udit Nandan Mishra[1], Ashish Sheera[3] and Ajay Kumar Prusty[4]

[1]Faculty of Agriculture, Sri Sri University, Cuttack, Odisha (754 006), India

[2]Krishi Vigyan Kendra, Odisha University of Agriculture and Technology, Angul, Odisha (759 132), India

[3]Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu, Chatha, Jammu and Kashmir (180 009), India

[4]M.S. Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Gajapati, Odisha (761 211), India

Open Access

Corresponding Author

Sandeep Rout

e-mail: sandeeprout1988@gmail.com

Keywords

Katha, Leguminosae, Medicinal, Timber

Article History

Received in 02nd August 2021

Received in revised form 16th August 2021

Accepted in final form 17th August 2021

E-mail: *bioticapublications@gmail.com*

How to cite this article?

Rout *et al.*, 2021. An Overview of Acacia catechu. Biotica Research Today 3(8): 691-693.

Abstract

Acacia catechu is commonly known as Khair or Kachu, which is widely used due to its medicinal properties in Asia and many other parts. The tree grows up to 15 meters tall and bark is dark brown with thorny branchlets. There is an excellent use of Acacia catechu in dermatology and sore throat. Recently, it has been reported that Acacia has antimycotic, hypoglycaemic activity. It is a multipurpose plant such as bark, leaves and wood of the plant possess high medicinal value. Conjunctivitis, Haemophytsis, Asthma, constant loose bowels, and many other diseases can be treated. The tree has restorative properties and is propagated through seed as well as through in vitro culture. It is used as fuel and produces high-quality charcoal along with can be used as fodder.

Introduction

Acacia catechu is a prickly deciduous tree that can grow up to 15 meters tall (50 feet). In Linnaean scientific categorization, the plant is known as khair in Hindi and kachu in Malay; as the kind species from which the concentrates cutch and catechu are inferred, the name was Latinized to "catechu."Kher, catechu, cachou, cutch tree, dark cutch, and dark catechu are a portion of its normal names. Senegalia catechu can be found all through South and Southeast Asia, including India, Myanmar, Thailand, and Indonesia. The multipurpose business vegetable tree, *Acacia catechu* (Roxb.) (Family Leguminosae) is local to the Indian Peninsula, especially in Maharashtra, Gujarat, Rajasthan, and Tamil Nadu, where it develops on bone-dry and rough soils. It is a significant segment of afforestation projects. This tree is additionally used to make pulpwood, blunder, feed, gum, and has a scope of therapeutic properties. Cal Khair or red Kutch are a few names for it.

Description of Morphology

It's a crooked deciduous tree with a light feathery crown and thin, thorny branchlets dark brown and glabrous. The bark is dark brown or dark grey on the outside, brown or red on the inside, 12-15 mm thick, tough, and exfoliates in long thin rectangular flakes that dangle often. The flames raged violently, becoming brown and then deep crimson. Branchlets were having pseudo-stipular spines in pairs below the petioles. When fully ripe, the pods are thin, straight, flat, glabrous dark-brown, and lustrous, measuring 10-15 cm by 2- 3 cm. Seeds are 3-8 mm in diameter and range in size from 3-8 mm.

Propagation

The tree may be reproduced by sowing the seeds, which must first be steeped in hot water. The seedlings can be put in the field after roughly six months in the nursery. The seed is dispersed by wind in natural settings. After the

pods dehisce, the seeds stick to the light pod valves and are frequently flown far away from the trees. Water has a role in seed dispersal in alluvial plains. The seed pod is washed down, and the seeds are rubbed out amid the sand and rocks of freshly formed islands and banks, despite the seed being quite heavy. The seedlings' early growth is greatly encouraged by loose, weed-free soil, which happens at the start of the rainy season (Humtsoe *et al*., 2018).

In vitro culture of *Acacia catechu*, a monetarily huge leguminous tree, has been normalized. Bud growing was instigated utilizing shoot tip and nodal explants from *A. thaliana* plants developed *in vitro* catechu on Murashige and Skoog (MS) basal medium enhanced with 1.0 mg/l 6-benzylaminopurine (BA) and 20 mg/l adenine sulfate (Ads). The pace of duplication was reached on MS medium enhanced with 1.5 mg/l BA, 0.01-0.05 mg/l (indole-3-acidic corrosive) IAA, and 50 mg/l Ads. The duplication rate differed from 3 to 6 shoots relying upon the development controllers utilized. Extracted shoots were planted on half-strength MS basal salts enhanced with 0.25 mg/l indole-3-butyric corrosive (IBA) or IAA and 20 g/l (w/v) sucrose following 10 to 12 days of culture (Rout *et al.*, 2008).

Acacia catechu, Dalbergia sissoo, and *Prosopis cineraria* mature hardwood and softwood cuttings were tested for their capacity to grow roots. *P. cineraria* were also found in coppice shoots. Various amounts of auxins were administered to the cuttings (IBA and NAA). *D. sissoo* rooted promptly, regardless of auxin treatment, with a 100 percent success rate for both hardwood and softwood cuttings. Although they did under treatment, *P. cineraria* and *A. catechu* were difficult to root. The softwood *A. catechu* cuttings with 100 mg/l IBA had a 50% success rate, while coppice shoots of *P. cineraria* with 1,000 mg/l IBA had a 25% success rate. In mature hardwood cuttings of *A. catechu*, niger auxins did not stimulate roots (Rout *et al.*, 2015).

The impact of growth regulators, such as in cuttings of *Acacia catechu* and *Toona ciliata*, various amounts of IBA and NAA influenced sprouting and rooting behavior. Different auxin concentrations of 2000 ppm, 4000 ppm, 6000 ppm, and 8000 ppm were used. Eight other treatments were utilized, including IBA and NAA, as well as a control. Polybags were used to plant the cuttings. In cuttings treated with 8000 ppm IBA, the highest sprouting percentage (52.22%) and rooting percentage (36.61%) were reported in Toonaciliata, whereas no rooting was detected in *Acacia catechu*. In *Acacia catechu* cuttings treated with 2000 ppm IBA, the highest sprouting percentage (77.79%) was recorded, with 11.29 cm sprouts. All IBA concentrations produced better outcomes in all species than NAA values (Thakur *et al.*, 2018).

Uses in Medicine

The tree's many components are utilized for various clinical purposes, including haemoptysis (spitting blood). Conjunctivitis can be treated with bark glue. Snake chomps are professed to be dealt with effectively utilizing the bark. Blossoms: A mix of bloom tips, cumic, milk, and sugar is successful for gonorrhea. Cutch and katha, both got from the heartwood, have a huge restorative worth. It's a cooling, stomach-related, and astringent spice that is utilized to treat illnesses including constant loose bowels and diarrhea, draining heaps, uterine hemorrhages, leucorrhoea, gleet, atonic dyspepsia, ongoing bronchitis, and the sky is the limit from there. It can likewise assist with inconsistent salivation, dying, ulcerated, or springy gums, tonsil hypertrophy, uvula unwinding, and aphthous ulceration of the month. A blend of catechu and myrrh (Kathol) is broadly encouraged to ladies as a tonic and galactagogue after labor. Kheersal is utilized to treat asthama, hack, and sore throat, among other chest problems (Kar *et al.*, 2020).

Other Applications

Despite the fact that it is a decent wood, khair is generally utilized for katha and kutch. Rice pestles, oil and sugarcane smashers, furrows, tent stakes, sword handles, and boat falls and knees are only a couple of the things produced using it. Nonetheless, in certain areas of Uttar Pradesh, there is a strange neighborhood notion against it; along these lines, it isn't used in the home structure. The heartwood of khair is normally sturdy, making it a beneficial monetary primary wood. This species has been perceived as "Super Group" lumber, which means it is appropriate for ranges of in excess of 12 meters and is the best option for lasting constructions (I.S.I., 1962). It functions admirably on apparatuses and device handles, especially hammers and plane bodies. It's ideal for making spokes and center points for wheels. Sapwood from khair is viewed as a byproduct in the katha business since it is at present utilized uniquely as a fuel. A generous measure of sapwood is discarded on the grounds that katha makers utilize disposed of heartwood chips as fuel in their boilers and bhattis. The synthetic piece of the wood got at the FRI, Dehra Dun shows that the sapwood of khair trees can be productively utilized for creating dyed cellulose, which can be utilized in an assortment of cellulose-based businesses like CMC, cellulose acetic acid derivation, ethers, and even paper and paperboards whenever made accessible in huge amounts.

Use as Fodder

It's a decent grub tree, and it's normal cut to take care of goats and, on uncommon events, cows. The vegetation is munched by steers, rhinoceros, deer, and elephants. The leaves incorporate 13.03-18.72 percent rough protein, 46.69-50.96 percent N free concentrates, and 0.14-0.17 percent phosphorus. The aggregate sum of supplements that can be processed is 46.33 kg, with a nutritive proportion of 15.0 for a dry substance. The edibility scores are moderately high, demonstrating that the leaves are feed for dairy cattle in view of crude protein, rough fiber, and tannin content.

Leaf grub is bountiful in *Acacia catechu.* It is also used as a fuel and produces high-quality charcoal, with moisture-free sapwood having a calorific value of 5142 calories (9256 B.T.U.) and heartwood having a calorific value of 4946 calories (8915 B.T.U.).

Conclusion

Acacia catechu is a deciduous tree with a significant part in afforestation projects along with restorative and medicinal properties, but there is a considerable research gap. It has potent anti-microbial and hypoglycaemic activity due to the presence of alkaloids. The therapeutic use of this tree is confined to traditional/ folk medicines, giving higher research for new drug molecules of definite activity. It is used to treat for a long time for sore throat and dermatological diseases and is also used as fodder and fuel. Hence, there is a need to make better and more modern approaches for different uses. The need is to do more research to identify active constituents which are responsible for its biological activity.

References

Humtsoe, C., Khare, N., Rout, S., Debbarma, R., 2018. Influence of different pre-treatment methods on seed germination and seedling growth performance of Golden shower tree (*Cassia fistula L.*). *Journal of Plant Development Sciences* 10(11), 617-621.

Kar, S., Rout, S., Sahu, K.K., Dongre, D., 2020. Potential of medicinal and aromatic plants in agroforestry system- a review. *Akshar Wangmay* 1(Special Issue), 39-44.

Rout, G.R., Senapati, S.K., Aparajeta, S., 2008. Micropropagation of *Acacia chundra* (Roxb.) DC. *Hort. Sci. (Prague)* 35(1), 22-26.

Rout, S., Nayak, S., 2015. Vegetative propagation of Karanja (*Pongamia pinnata* L. pierre.) through stem cuttings. *Journal of Applied and Natural Science* 7(2), 844-850.

Thakur, Lalit, Tara, Gupta, Rakesh, Kumar, 2018. Effect of growth regulators on sprouting and rooting behaviour in cuttings of *Acacia catechu* Willd. and *Toona ciliata* M. Roem. *Journal of Pharmacognosy and Phytochemistry* SP1: 109-114.