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A REVIEW ON MEDICINAL PLANT OF *RHYNCHOSIA HEYNEI*

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Abstract

According to the IUCN Red list of threatened species, a global database of Plant species to track at risk species, Rhynchosia heynei is a herbaceous under shrub, an important, indigenous, threatened forestry species of tribal medicinal plant species belonging to the family Fabaceae. Adivasi tribal people (chenchu, lambada) living in the Eastern Ghats hill ranges have used R. heynei leaves extensively for antibacterial agents, rheumatic aches, arthritis, and skin ailments. The findings could be widely applied in medicinal chemistry and pharmacological analysis to aid in the development of new antibacterial medications. The seeds were ground and cooked, and either the decoctionwas taken as orally or the fresh leaf paste was topically applied to cuts and wounds. In vitro tests of Rhynchosia heynei concentrate revealed antimicrobial, antioxidant, and anticancer properties. Terpineol, camphene hydrate, germacrene-D, humulene, linalool, and other important constituents in R. heynei essential oil may be responsible for the plant's medicinal properties.

KEY WORDS: Rhynchosia heynei, terpineol, anti microbial, anti oxidant, anti cancer

Introduction

Natural compounds have received increased attention, and their use has become more common in several areas, such as the demand for products that are not tested on animals, which has an impact on both manufacturers and consumers.(L.A. Hanna *et al* ., 2021)As a result, there is a need to look for raw materials that produce products using safe, environmentally friendly processes. In this context, the extraction and application of bioactive compounds derived from vegetable matrices is promising for a wide range of applications, including pharmaceuticals, food, and cosmetics, where vegetable extracts have emerged as a viable alternative to synthetic and animal-derived products. Furthermore, they can be produced using cleaner, more sustainable methods that do not produce undesirable by products (Maurício M *et al.*2022).

Essential oils are secondary metabolites that have been separated from aromatic plants. They are widely distributed in the roots, stems, leaves, flowers, fruits, and other sections of plants, and have a distinctive aroma.(Xiaojin Peng, 2022; Liu et al., 2018.) Because of its high terpene, oxygenated terpene, aromatic, and phenolic component content, it has good antioxidant effects, antibacterial and antifungal activities, anti-inflammatory activity, antiviral activity, anticancer activity, and enzyme-inhibiting activity and the use of essential oils in the manufacturing of pharmaceuticals, cosmetics, and food additives is complete.(*Z. Li* et al. 2022).

The endemic medicinal plant Rhynchosia heynei Wt. & Arn. (Fabaceae), vernacular name Adavi vulava, is found in India's Eastern Ghats.(Pullaiah & Ramamurthy, 2001).The vernacular name for R. heynei is Adavi vuluva. It is a significant, indigenous, imperilled, traditional, and tribal medicinal plant species belonging to the family Fabacaea and is categorised in Tribe phaceoleae and subtribe Cajaninae and subfamily papilionoideae. It is indigenous to the Seshachalam Biosphere Reserve, the Chittoor district, the Rayalaseema region, the Andhra Pradesh state, and the Eastern Ghats of India. It is found in the forests of the Tirumala Hills. Rhynchosia coodoorensis is a name for R. heynei. Adivasi tribal people (chenchu, lambada) living in the hill ranges of the Eastern Ghats have employed the leaves of R. heynei (Fig.1)extensively for antibacterial agents, rheumatic aches, arthritis, and skin ailments.(Chadburn, H 2012, Bhakshu, L.M., 2009). The findings might be widely used in medicinal chemistry and pharmacological analysis to facilitate the creation of new antibacterial medicines.Resources and techniques vegetal matter.The herb was utilised by the Chenchu and Lambada tribes to treat rheumatic pain and arthritis, (Bhakshu LM 2002) according to ethnomedicobotanical studies. The seeds were pulverised and cooked, and either the decoction was administered orally, or the fresh leaf paste was applied topically. For cuts and wounds, the leaves' paste was applied (Bhakshu LM 2002).

Fig no: 1 Rhynchosia heynei

Taxonomy(G. Renu, Sanjana Julias Thilakar *et..al)*

Root	Root
Kingdom	Plantae
Phylum	Tracheophyta
Class	Equisetopsida C. Agardh
Order	Fabales
Family	Fabaceae
Genus	Rhynchosia
Species	Rhynchosia heynei Wight & Arn.

Bioactives:

The phytochemical studies revealed that extracts of R. heynei had shown the presence of the essential oil,(Bhakshu LM 2002), as shown in Table 2. The majority of the components of essential oil were oxygenated terpenes, which have been reported to be highly lipophilic. The oil's high concentration of oxygenated monoterpenes may be responsible for its antimicrobial properties. Terpineol, camphene hydrate, germacrene-D, humulene, linalool, and other important constituents in R. heynei essential oil may be responsible for the plant's medicinal properties. Plant leaves are mainly used in Rheumatic pain, Arthritis, Skin diseases, Post digesion effect.

Table 2. Chemical components of essential oil of *Rhynchosia heynei* (leaves)

Name of compound	Retention index	Percentage
Germacrene-D	1484	4.071
1-Pentanol	744	71.98
Terpineol	1169	0.192
Camphene hydrate	1150	16.373
Linalool	1552	1.698
Humulene	1451	0.304
Menthe-1,8-dien-4-ol	1700	0.479
Tetracosanoic acid	2685	1.66
Tetradecane	1405	0.942
Stearic acid	2193	0.407

Pharmacology*:*

Antimicrobial Activity

S.Soneya et al. studied the antimicrobial properties of aqueous leaf extract of *Rhynchosia heynei* on RH-AgNPs were tested using the disc diffusion method against various human pathogenic bacteria such as E. coli, K. pneumoniae, B. subtilis, and S. aureus. On each petriplate containing nutrient agar (NA) media inoculated with 200 lL of microbial inoculum, five sterile paper discs were placed. One disc contains the commonly used antibiotic ampicillin. The second disc includes 25 lL of RH-AgNPs. The third disc includes 25 lL of RHLE. The fourth disc contains 25 lL of 1 mM AgNO3 and the final disc does not contain any test sample. Bacterial growth inhibition was observed after incubation, and the diameter of the inhibition zone was measured (mm). The results concluded that all the test organisms were inhibited significantly, by aqueous leaf extracts in a dose dependent manner as compared to the standard. Antimicrobial activity of aqueous leaf extract of *Rhynchosia heynei* was excellent activity against different human pathgens including *klebsiella pneumoniae, Escheria coli*(Gram -ve), *Bacillus subtilis and staphylococcus aureus*(Gram+ ve).

Antioxidant Activity

S.Soneya et al. assessed the antioxidant activity of *by invitro* assay methods using DPPH (2,2′-diphenyl-1-Picrylhydrazyl) stable free racdical scavenging , hydrogen peroxide scavenging activities. Ascorbic acid was used as the standard antioxidant in these two tests. From the above methods aqueous leaf extract of *Rhynchosia heynei* has shown good antioxidant property.

Anticancer Activity

S.Soneya et al. investigated the anticancer activity of aqueous leaf extract of *Rhynchosia heynei* A549 (human lung adenocarcinoma) and COLO205 (human colon cancer) cancer cell lines were obtained from the National Centre for Cellular Sciences (NCCS) in Pune, India. The anticancer activity aqueous leaf extract of *Rhynchosia heynei* exhibited dose dependent activity with maximun inhibition of 85% and 72% respectively against different cancer cell lines of A549 (human lung adenocarcinoma) and COLO205 (human colon cancer).

Conclusion

This survey of writing features one of the significance of certain plants of variety Rhynchosia heynei having a place with the family Fabaceae. The presence of compounds such as terpineol, camphene hydrate, germacrene-D, humulene, linalool its most use in medicine and traditional medicines. It gives a scope for further studies of *in vitro* and *in vivo* activities like antiulcer activity, hypertension, rheumatic pains, anticonvulsant, anti-nociceptive activity.

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