



Exploration of Some Wild Food Plants Used by Local People of Kangchup Chingkhong, Senapati District of Manipur, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study on wild food plants was carried out to document the wild food plants used by the local people of Kangchup Chingkhong of Senapati District, Manipur. An extensive and intensive field survey was done in March, 2022 to April, 2023. Information was obtained from 30 respondent age ranging from 45 to 85 years old individuals who have a good understanding of traditional knowledge of wild edible plants. A total of 30 wild plant species belonging to 23 genera and 17 families have been reported from the area. Zingiberaceae was the dominant family that represented 9 taxa followed by Fabaceae with 3 taxa while Rubiaceae, Verbenaceae and Asteraceae represent 2 taxa each and other 12 families represent 1 taxa each. Trees, Herbs, shrubs and climbers form the habit of these plants. The highest proportion of edible species were herbs, 12 numbers (41%) followed by trees, 10 numbers (31%), shrubs, 5 numbers (17%), creepers, 2 numbers (7%) and climber, 1

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number (4%). Among the parts, leaves were mostly used (27%), followed by rhizome (22 %), fruits (13 %), shoots and flower (11% each), bark and whole plants (5% each) and tuber and stem (3 % each).

Keywords: Kangchup Chingkhong; wild food plant; traditional knowledge; vegetable.

1. INTRODUCTION

“The practice of consuming wild food plants is as old as human prehistory. Early humans obtained their food by hunting, fishing and gathering these plants or parts of plants (e.g., stems, roots, flowers, fruits, leaves, buds, and seeds), that are safe for human consumption. Wild foods are also integral to traditional food systems and have nutritional and cultural value for many indigenous peoples” [1]. “Wild plants play an important role in the livelihoods of local communities of hill areas and rural people to meet their nutritional and income sources. Wild plants are richer in minerals compared to cultivated ones, and these plants may satisfy the daily human need for elementary nutrition sources, particularly those of Vitamin C and A, and for some minerals according to WHO regulation” [2]. “Wild plants are also known to be used since time of immemorial for different purposes, such as food, medicines, production of goods and religious rituals. In particular, the use of wild edible plants mainly linked to primitive periods where there is no modern agriculture food is available in the region” [3]. “The use of wild plant resources has been an integral part of cultural, religious and health aspect of numerous indigenous and rural communities across the globe” [4]. “Wild edible plants are a source of vegetables, fruits, staple food, and spices for indigenous people and are the main source of food. These plants play an important role in the development of new crops through domestication, giving rise to cultivated food plants and strengthening local food security” [5]. “The nutritional value of traditional leafy vegetables is higher than several conventional vegetables. They also contain antioxidants which offer protection against many chronic diseases like heart disease and the certain type of cancers. The potential nutritional value of traditional vegetables may help to meet the increasing demands of the growing population” [6]. “The popularity and use of wild foods have been declining continuously in the modern-day society due to globalization and modern lifestyle. Traditional knowledge and the culture of using wild plant as food and medicine has drastically reduced in current time due to the habit of

choosing of easily available domesticated food over the wild food. Traditional knowledge of plants and their properties has always been transmitted from generation to generation through the natural course of everyday life. Transmission of traditional knowledge between the older and younger generation is no longer exists that’s why the continuation of traditional knowledge is endangered” [5].

Modern scientific researchers are trying to value these traditional food items to fill the gaps between growing population and food production. The diversity of these plant resources needs to be documented and analysis should be done for their nutritional values [7]. Therefore, the aim of this study was to explore and document of some wild food plants of Kangchup hill area of Senapati District of Manipur.

2. MATERIALS AND METHODS

2.1 Study Area

Kangchup Chingkhong is a Village in Saitu Gamphazol Tehsil in Senapati District of Manipur State, India. It is located 40 Km towards South from District headquarters Senapati. 19 KM from State capital Imphal. It lies between 24.8366348° N latitude to 93.8082835° E longitude. Kangchup Chingkhong is surrounded by Kangpokpi Tehsil towards North, Imphal West II Tehsil towards South, Tamei Tehsil towards North, Saikul Tehsil towards East.

2.2 Field Survey

An extensive and intensive field survey and collection programmed of indigenous wild food plants was conducted during March 2022 to April 2023 at Kangchup Chingkhong of Senapati district of Manipur. The data including scientific name, family, local names and parts used were collected through interviews using semi-structured questionnaires and discussions with elderly individuals who have a good understanding of traditional knowledge of wild edible plants. Information was obtained from 30 respondent age ranging from 45 to 85 years old. Among the informants, there were 18 men and 12 females (Table 1).

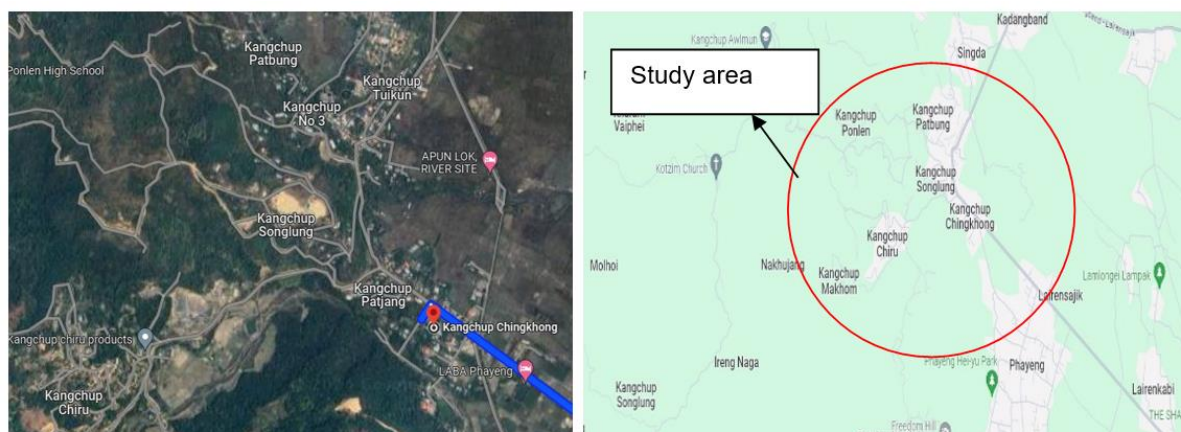


Fig. 1. Map of study area

Table 1. Demographic data of the local participants

| Age range | No. Of informants | No. Of male | No. Of female |
|-----------|-------------------|-------------|---------------|
| 45-55 | 2 | 0 | 2 |
| 56-65 | 14 | 8 | 6 |
| 66-75 | 10 | 7 | 3 |
| 76-85 | 4 | 3 | 1 |
| Total | 30 | 18 | 12 |

3. RESULTS AND DISCUSSION

During the present study a total of 30 plant species belonging to 23 genera and 17 families were reported (Table 2). Zingiberaceae was the dominant family that represented 9 taxa (30%) followed by Fabaceae with 3 taxa (10%) while Rubiaceae, Verbenaceae and Asteraceae represent 2 taxa each (7%) and other 12 families represent 1 taxa each (3%) (Fig. 1). Most of the collected plant species was used as food by the localities of Kangchup Chingkhong, Senapati District of Manipur. Trees, Herbs, shrubs and woody climbers form the habit of these plants. Herb occupies highest habit (41%) followed by tree (31%), shrub (17%), creepers (7%) and climber (4%) (Fig. 2). The highest proportion of edible species were herbs, 12 numbers (41%) followed by trees, 10 numbers (31%), shrubs, 5 numbers (17%), creepers, 2 numbers (7%) and climber, 1 number (4%). Among the parts, leaves were mostly used (27%), followed by rhizome (22%), fruits (13%), shoots and flower (11% each), bark and whole plants (5% each) and tuber and stem (3% each) (Fig. 3).

The ethnic practice and indigenous knowledge to consume wild plant as food as well as medicine has been rapidly decreased due to rapid urbanization and modern lifestyle in the developing countries like India. At the same time,

the loss of indigenous knowledge has been discovered to be one of the major threats to the sustainability of biological diversity [5]. Arjona-Garcia et al, 2021 also reported that urbanization decreases people's involvement in activities in natural environments and can lead to devaluation of and discrimination against traditional knowledge. Therefore, the management and transmission of traditional knowledge to new generations is crucial not just for the preservation of cultural heritage, but also for the prevention of biodiversity loss [8].

More exploration and documentation work of such high value wild plant is required for future generations. Ethno-botanical studies indicated that hundreds of wild species are still unexplored in each country, representing an enormous wealth of agro-biodiversity with potential to contribute to improved income, food security and nutrition, combating hidden hunger [9].

Several workers have work on such survey and documentation of wild plant in Manipur. Laishram et. al, 2022 reported 108 plant species belonging to 86 genera and 56 families and Zingiberaceae was the most dominant family with seven species used as wild edible plants. Herbs were most dominant with 42 species. Sixty-six species (61%) of wild edible plants were marketed [10]. Rajkumari Supriya Devi and Sanjeet Kumar,

Table 2. Wild plants used as foods by localities of KangchupChingkhong, Senapati District, Manipur

| SI. No. | Botanical name | Family | Local name | Parts use | Ethnic uses | Habit/ Habitat |
|---------|---|---------------|---------------------------|-------------------------|---|-------------------|
| 1 | <i>Paedaria foetida</i> L. | Rubiaceae | Uri-oinam | Leaves and Creeper | Leaves are used for the treatment of constipation | Creeper |
| 2 | <i>Clerodendrum colebrookianum</i> Walp. | Verbenaceae | KuthapAngouba | Leaves and young shoot | Leaves and young shoot are cooked as vegetable curry items as well as used as best medicine to control blood pressure | Tree |
| 3 | <i>Hodgsonia heteroclita</i> (Roxb.) | Cucurbitaceae | Kathai | Fruit | Roasted Fruits are eaten as vegetable as well as used in making chutney | Creeper |
| 4 | <i>Clerodendrum serratum</i> Linn. | Verbenaceae | Moirang khanambi | Whole plant | Leaves and young shoot are cooked as vegetable curry items. Decoction of roots are used as medicine as pain killer | Shrub |
| 5 | <i>Kaempferia parviflora</i> | Zingiberaceae | Sing amuba (black ginger) | Rhizome | Used in treatment of diabetes and lower cholesterol level | Herb |
| 6 | <i>Curcuma amada</i> Roxb. | Zingiberaceae | Yaiheinouman | Rhizome | Used in preparation of chutney | Herb |
| 7 | <i>Brachycorythis obcordata</i> (Lindl.ex Wall) | Orchidaceae | Kak-uba | Leaves and Shoots | Leaves and shoots are eaten as raw and cooked as vegetables curry items | Herb |
| 8 | <i>Dysoxylum excelsum</i> | Mileaceae | Ujao (YongchakNambi) | Leaves, Stem and Flower | Used as vegetables curry items | Tree |
| 9 | <i>Alpinia officinarum</i> (Gaerdn.) Burdd | Zingiberaceae | Pulleimanbi | Rhizome | Rhizome are used as spices | Herb |
| 10 | <i>Siphonochilus aethiopicus</i> | Zingiberaceae | Lam-sing | Rhizome | Rhizome are used as spices | Herb |
| 11 | <i>Parkia timoriana</i> (DC.) Merr. | Fabaceae | Yongchak | Fruit | Used as vegetables curry | Tree |
| 12 | <i>Leucaena leucocephala</i> | Mimosaceae | Chigonglei | Fruit | Used as vegetables curry | Tree |
| 13 | <i>Wendlandia grandis</i> Cowan | Rubiaceae | Pheija | Flower | Used as vegetables curry | Tree |
| 14 | <i>Accacia pennata</i> (L) Willd. | Fabaceae | Khang | Leaves and young shoot | Used as vegetables curry | Woody climber |
| 15 | <i>Aalpinia galanga</i> (L) Willd. | Zingiberaceae | Kanghu | Rhizome | Used as spices | Herb |
| 16 | <i>Canna indica</i> L. | Cannaceae | Alalu | Rhizome | Used as food in cooking vegetables curry items | Herb |
| 17 | <i>Smalanthus</i> | Asteraceae | Ground apple | Tuber | Eaten as raw as well as cooked as vegetables | Shrub |

| Sl. No. | Botanical name | Family | Local name | Parts use | Ethnic uses | Habit/ Habitat |
|---------|---|------------------|---------------|---------------------------------|--|-------------------|
| 18 | <i>sonchifolius</i> <i>Zinziber striolatum</i> Ludwig Diels | Zingiberaceae | Sarei | Flower | Used as food in cooking vegetables curry items | Herb |
| 19 | <i>Zanthoxylum</i> <i>oxyphyllum</i> Edgew. | Rutaceae | Singjol | Leaves | Used as food in cooking vegetables curry items | Shrub |
| 20 | <i>Carcuma angustifolia</i> Roxb. | Zingiberaceae | Yaipan | Flower | Flower are used as vegetable curry | Herb |
| 21 | <i>Zingiber cassumunar</i> Roxb. | Zingiberaceae | Tekhao yaikhu | Rhizome | Use as medicine in treatment of Asthma, constipation and stomach bloating | Herb |
| 22 | <i>Viola serpens</i> Wall. | Violaceae | Huikhong | Whole plant | Use as vegetables | Herb |
| 23 | <i>Rhynchochotum</i> <i>ellipticum</i> A. DC. | Gesneraceae | Yembum | Leaves | Leaves are eaten as either raw or cooked as vegetables items as well as use as medicine for the treatment of peptic ulcer and constipation | Shrub |
| 24 | <i>Oroxylum indicum</i> (L) Vent. | Bignoniaceae | Shamba | Fruit, bark and leaves | Flower and fruits are eaten as raw and cooked as vegetables and also use in treatment of cancer | Tree |
| 25 | <i>Eurya japonica</i> Thunb. | Ternstroemiaceae | uyangan | Leaves | Leaves are use as vegetable curry | Tree |
| 26 | <i>Cinnamomum zeylanicum</i> Bryn. | Laoraceae | Ushingsa | Bark | Bark powder use as spices. Use as digestive medicine | Tree |
| 27 | <i>Artemisia vulgaris</i> L. | Asteraceae | Laibakngou | Tender shoot | Tender shoot is cooked as vegetables. Use as medicine as diabetic treatment as well as insect repellent. | Shrub |
| 28 | <i>Rhus semialata</i> Murray. | Anarcadiaceae | Heimang | Young leaves, flower and fruits | Flower and fruits are eaten as raw, water soaked of dry seeds are used in dyspepsia, peptic ulcer and unhealthy uterus. | Tree |
| 29 | <i>Curcuma caesia</i> Roxb. | Zingiberaceae | Yaimu | Rhizome | Use in treatment of cough and decoction of <i>C. caesia</i> and <i>O. indicum</i> use as intestinal cancer treatment | Herb |
| 30 | <i>Albizia myriophylla</i> Benth. | Fabaceae | Yangli | Bark | Use in the preparation of local wine | Tree |

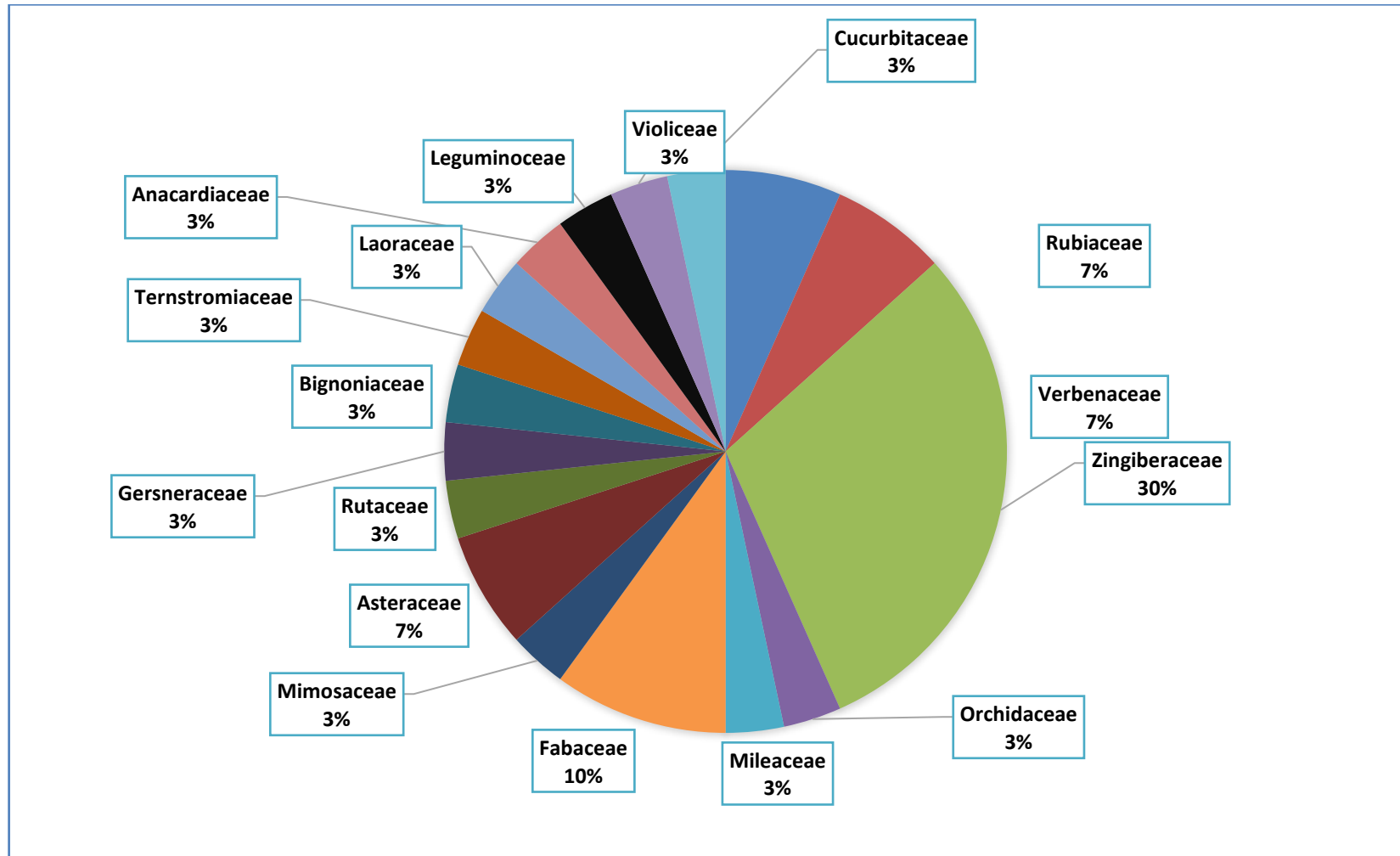


Fig. 2. Distribution of medicinal plant species according to their family in the study area

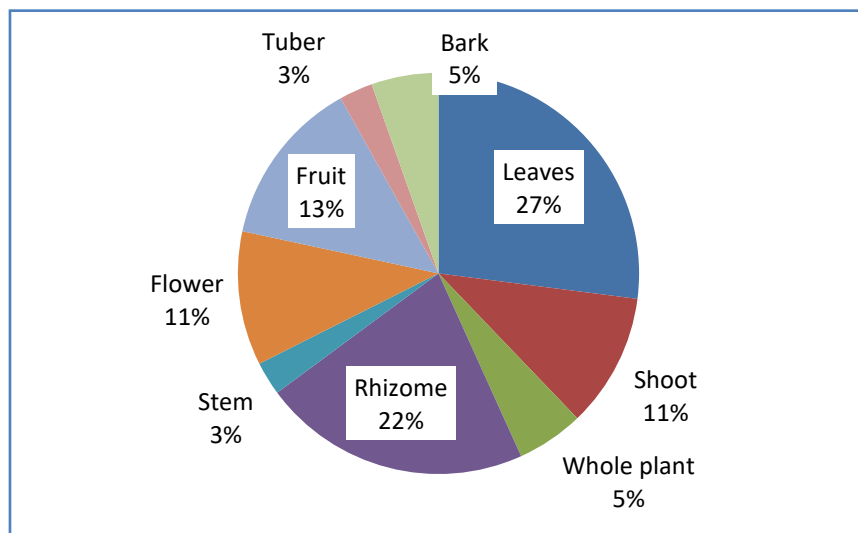


Fig. 3. Description of plant Habit

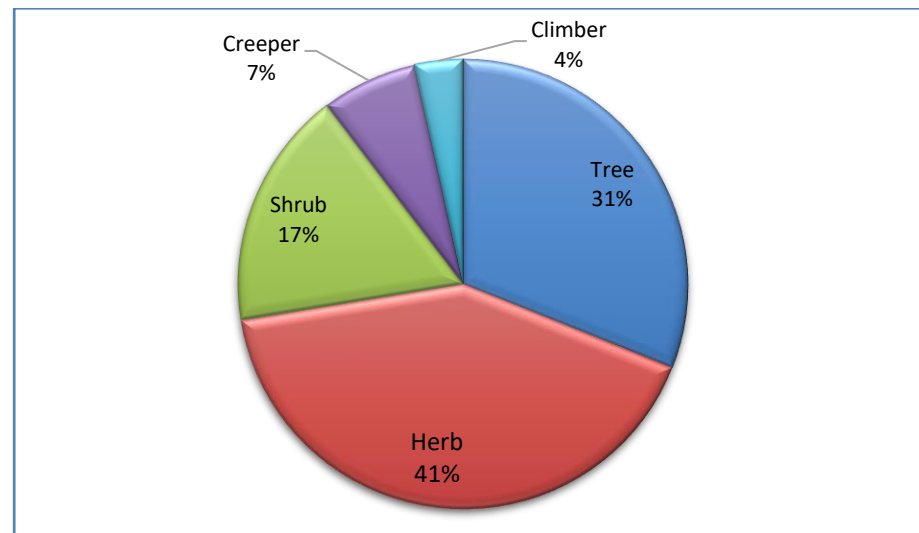


Fig. 4. Utilization of plant parts

2021 reported 40 wild food consumed by local community along with wild mushrooms. They also observed that most common wild foods are also commonly sold in local markets [11]. Gangte et.al, 2013 also reported 84 wild edible plants belonging to 36 families used by Zou tribes of Manipur. They also reported that the most common part of the plant consumed is leaves with 29 species (34.5%), tender shoots with 18 species (21.4%), fruits with 14 species (16.6%), rhizome, corm and tuber with 9 species (10.7%), inflorescence with 8 species (9.5%), pods with 7 species (8.3%), seeds with 6 species (7.14%), petioles with 3 species (3.5%) and fruit cover (rind), bark, frond and root with 1 species (1.19%)each [12].

The present studies are in line with earlier studies as stated above. Both the present and other previous study revealed that the local communities of the state used diverse wild plant as their food and medicine as well as their source of income. All of them reported that Wild plants are not only organic food that can aid in the fight against diseases and disorders, but also serve as a source of strength in their economic situation. The local communities of this area collected those wild plants in bulk and sell in the local market to fulfil day to day need.

4. CONCLUSION

From the above investigation, it was found that Kangchup Chingkhong has a variety of wild edible, medicinal plants. The local people collected wild food plants for their livelihood purposes. The use of wild plant as food and medicine needs to be properly document for future generations. The present study emphasizes the importance of appropriate awareness among society regarding the socio-economic implications for conservation and sustainable development. Since the plant species may present different valuable pharma constituents, a thorough investigation about the phyto-constituents present of these plant species is much needed.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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