Introduction

Traditional knowledge is an ancient way of combating several kinds of ailments and day to day necessities of human beings. Non-timber forest products (NTFPs) have been in use since time immemorial by communities living near forests and NTFP not only provide source of livelihood to tribal people but also contribute to a good amount of total revenue collected by the forest departments\(^1\). At the same time, plant species in many parts of the globe are threatened by overexploitation, destructive harvesting techniques and loss of habitat and genetic diversity\(^3\). Many potentially valuable plant species are being lost before their proper conservation. Overall effect of this trend is the loss of knowledge held by the local people and cultures concurrent with the lost resources.

Arunachal Pradesh, being a tribal dominated state has a potentiality of huge medicinal and other plant repositories and traditional know-how in the use of various NTFPs. A good amount of information has been generated on ethnomedicinal plants of Arunachal Pradesh by various authors\(^4\)-\(^15\). Soap/detergent is a prime necessity to maintain cleanliness in day to day activities of human beings. There are several chemical
detergents/soap available for washing and bathing but natural soap substitutes in domestic use are very few. *Sapindus mukorossi* Gaertn., Hindi-Ritha (Family-Sapindaceae) has been known for its rich cleansing property and popularly known as soap-nut tree and is in wide use\(^\text{16-17}\). However, the use of *Gymnocladus assamicus* Kanjilal ex P.C. Kanjilal pods as a substitute for soap has not been elaborately discussed so far. *G. assamicus*, a medium sized tree belonging to the family Caesalpiniaceae, is locally called as *Mewang Mashi* by *Monpa* tribe and *Minkling* by *Lish Monpa* tribe. The species is endemic to North-East India and categorized as critically endangered\(^\text{18}\) and prioritized for national recovery programme in India\(^\text{19}\). Flowering of the species begins during the end of March just after leaf flushing and lasts up to mid April. Fruit maturation takes place during January-February. Mature fruit-fall starts during February and lasts up to April. The raw fruits have alluring smell with fleshy pods. Seeds are black and stony in nature.

In the present paper, use of the pod as a soap/detergent substitute and various other uses have been discussed in detail to comprehend the potentiality of this tree species and the traditional knowledge of the *Monpa* tribe of Dirang circle of West Kameng district of Arunachal Pradesh.

Materials and Methods

**Study site**

The present study was conducted at Dirang circle of West Kameng district of Arunachal Pradesh in North-East India; a biodiversity hot spot in the world. The area lies in between 27º15’-27º25’N latitude and 92º10’-92º15’E longitudes. Climate of the area is sub-tropical in nature with average annual rainfall of 1752 mm and temperature ranges between 1°C (December) to 34°C (June).

**Pods collection**

During February-March, the local *Monpa* tribe collects fully mature fruits from the tree or from beneath the tree. In some cases, it is found that the people cut down the pod bearing branches to harvest them. They store the intact fruits for future use.

**Data collection**

Information regarding various uses was gathered through interview with local *Monpa* people. The most significant use of *G. assamicus* pod was collected during the preparation of *Torgen* (flower shaped structure) during *Chokpa* i.e. their religious festival in *Palyul* Jhangchub Dargyeling *Dirang Monastery* located at Le Ong Village, Dirang of West Kameng district of Arunachal Pradesh. The whole procedure was demonstrated by Mr. Khempo Dorjee Palsang, the head Lama (Buddhist religious priest) of the Monastery (*Gompa*).

**Results and Discussion**

**As soap substitute**

The *Monpa* people who practice Buddhism used to worship at their houses as well as *Gompas* on various occasions. For their worship, the Lama prepares *Torgen* (flower) with the help of *Torma*, a mixture of wheat flour, Yak milk fat (*ghee*) and Candle wax. The *Torma*, being made up of oily materials is very sticky and adhesive which cohere in hands during *Torgen* preparation. To prevent such stickiness of the *Torma* in hands, pre-soaked *G. assamicus* pods are rubbed in hands in place of soap or detergent. This efficient property is found more effective than any other synthetic detergent available in the market. Use of this naturally available soap is believed to be more blessed than the other soap or detergent. The people in and around Dirang use the fleshy pods for domestic cleansing purposes also such as washing clothes, hands, utensils, etc. Rubbing the fleshy pods in water produces good amount of saponin and possess effective cleansing action. People prefer to use the pods for bathing as a substitute of soap. They are also used for washing hair and considered effective in removing dandruff.

**Edible seeds**

The black coloured seeds of the tree are stony and are extremely hard. Other than the external black testa, a waxy layer inside the testa prevents imbibition of seeds for a few days even if immersed in water. The seeds are roasted in open fire and the cotyledons are taken as a substitute of groundnut. The roasted seeds bear a similar smell of coffee and hence the species is also called as Coffee Tree; roasted seeds are used as coffee substitute. However, excessive eating of roasted seeds cause dizziness, nausea and vomiting.

**Other uses**

The forest dwellers also apply the decoction of pods to remove/avoid leech from their domestic animals. For this, they crush the pods in to small pieces and soak overnight in water. In the next morning, the decoction is applied in legs and lower
body parts of their animals and allowed for grazing in forest. This practice assures them full protection from any kind of leech infection of their animals

Conclusion
During present study it has been found that the pods possess efficient cleansing property against wide range of strong fats, oils and other complex grimes of day-to-day activities. They are good for washing hair and clothes too. It may be suggested that the plant has an impending future for preparation of plant based soap and may serve as an alternative source of revenue for the local people. As the tree is categorized as a critically endangered species, promotion of such technique will motivate the people for artificial plantation. Protection of existing population and their habitat, awareness of local community for sustainable harvest of mature pods and reintroduction of seedlings into their native environment are some of the important steps for effective conservation of the species. Study on intrinsic and extrinsic factors causing depletion of *G. assamicus* will be helpful to formulate and adopt scientifically oriented conservation strategies.

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References