EVALUATION OF SEEDS OF XYLOCARPUS GRANATUM KOENIG FOR PROXIMATE COMPOSITION

Dr. Priya D. Patil*

Abstract :

Mangroves are highly beneficial, as they yield many valuable products, while also performing many other ecological functions that support coastal populations. Indian mangrove resources are increasingly being lost due to the unsustainable utilization and habitat conversion. *Xylocarpus granatum* is a mangrove species that has medicinal properties. However, their nutritive values have not been evaluated. In present study, proximate composition of seeds of the species was investigated. The results revealed that, seeds of *X. granatum* contained highest amount of moisture content (9.36%) and crude lipid content (12.02%).

Keywords : *Xylocarpus, mangrove, moisture content, crude lipid*

Introduction:

Mangrove plants are specialized woody plants growing in swamps of tidal-coastal areas and tropical as well as sub-tropical parts of the world, where they exist in high temperature, strong winds, extreme tides and high salinity. The unique ecology, morphological characteristics and traditional uses of mangrove species have drawn the attention of researchers over the years. They are biochemically unique in nature and considered as a source of novel natural products. Usually mangroves are rich in polyphenols and tannins (Kathiresan and Ravi, 1990). Mangroves are important ecologically as well as economically. Mangrove leaves contain phenols and flavonoids. Different plant parts of mangroves have long been used in folk medicines to treat diseases (Bandaranayake, 1998). Marine flora and fauna have been extensively used in the treatment of many diseases.

X. granatum is medium sized tree with small buttress and belongs to family Meliaceae. Leaves unipinnate compound, 2-4 or 6 leaflets, exstipulate, leaflet obovate-oblong, rounded at the tip and cuneate at the base. Fruit globose, golden-yellow, woody, 4-20 seeded (Tomlinson,

* *Department of Botany, Vivekanand College, Kolhapur *ppriya.patil@rediffmail.com*

1986). The species is very important ecologically but it is becoming endangered from their natural habitats due to the human interference. Most reports on some lesser-known and unconventional plants indicate that they could be good sources of nutrients and many have the potential of broadening the present status of utilization for mankind (Viano *et al.,* 1995). This study provides information on the nutritional composition of the mangrove species *X. granatum*, from a lesser-known source.

Material and Methods

Collection of Material: Fruits were collected from coastal area of Sindhudurg district.

Sample Preparation: The fruits were opened and seeds were air-dried and ground to a fine powder. Powder is stored in air-tight containers prior to further analysis.

Proximate analysis: The moisture and ash content was determined by gravimetric method. The crude fiber was calculated by acid-base digestion. Crude protein was determined by Macro-Kjeldahl method (Vogel, 1971). Crude fat content was determined gravimetrically following Soxhlet extraction with ether according to Official "Association of Official Analytical Chemists" (AOAC) method (1990). Available carbohydrate was estimated "by difference" using the formula, TCH (%) =100-% (CP+A+ CF+M). The energy value were estimated by calculation method using following formula, Energy value (g/100g) = [4x crude protein] + [4 x carbohydrate] + [9 x crude fat].

Results and Discussion :

The proximate composition of the seeds of *X. granatum* is depicted in Table 1, which revealed that seeds contained crude lipids (12.02%), crude proteins (4.91%), ash (2,06%), crude fiber (3.42%) and moisture (9.36%). The data of *X. granatum* was compared with the data of *X. moluccensis* which was published earlier (Gunawan *et al.,* 2013). The table showed that both the species of *Xylocarpus* are close to each other. It was found that seeds of *X. granatum* have potential as biodiesel feedstock due to their lipid content.

Table 1: Proximate composition of seeds of *Xylocarpus*:

Sr. No.	Nutrients	*X* granatum	X moluccensis
1.	Moisture (%)	9.36	6.06
2.	Ash (%)	2.06	9.77
3.	Crude protein (%)	4.91	7.4
4.	Crude lipid (%)	12.02	10.21
5.	Crude fiber (%)	3.42	10.77
6.	Carbohydrate (%)	68.23	56.29
7.	Total energy (Kcal/100g)	400.74	—

From above table, we can see that, in both the species seeds contained carbohydrate content at high amount. It is apparent that seeds of *X. granatum* are good source of carbohydrates. Plants foods that provide more than 12% of their calorific value from protein are a good source of protein. The total energy content of *X. granatum* was estimated to be 400.74 Kcal/100g (DW), which is an indication that they could be an important source of dietary calorie. Calorific content of *X. granatum* could be attributed to high carbohydrate and protein contents.

Since no other study has been reported for seeds of *X. granatum* regarding proximate composition, it was impossible to compare the values resulted to the other scientists.

Conclusions :

It can be concluded that, nutrients found in the selected species are in variable concentration. Carbohydrate is occupying the major portion of seeds of *X. granatum*. Considering the high lipid content of seeds of *X. granatum* is potential enough to be processed as a source of biodiesel. This work throws some light on potential mangrove species and helps further research on biodiesel sorces.

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