

Value addition of wild and underutilized edible fruits of Bastar region of Chhattisgarh

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ABSTRACT

Fruit collection from wild for food and domesticating food plants for multipurpose use is an age old practice in Indian subcontinent. The rich diversity in Bastar region of Chhattisgarh besides providing timber, firewood, fodder, they serve as insurance in periods of food scarcity also provides nutritious food, and also income to tribal and the poor people living close to forests and rural areas. Quite often, these wild and underutilized fruit crops are nutritionally very rich and of great medicinal value which can play a significant role in addressing nutritional needs while also adding value and generating extra earnings for the rural communities. Wild and underutilized fruit crops are nutritionally very rich and of great medicinal value which can play a significant role in addressing nutritional needs while also adding value and generating extra earnings for the rural communities and therefore it are necessary to make them available for consumption throughout the year in the form of processed or preserved form.

Keywords: wild, underutilized fruit, food scarcity, nutritional, processed form.

INTRODUCTION

Fruits are nature's wonderful gift to mankind; a life-enhancing medicines gift packed with vitamins, minerals, anti-oxidants, and many micronutrients. The word fruit is derived from the Latin word "*fructus*"—to enjoy the produce (Coombe, 1976). Botanically a seed-bearing structure found in flowering plants or also called angiosperms is known as fruit. Fruits and vegetables contain important vitamins, minerals, fibre and plant chemicals. A diet high in fruit and vegetables can help cover you against numerous health issues. Horticultural plants including cultivated and wild edible forms play a highly important role on human diet as vitamins, minerals and dietary fiber sources and they have also become a significant part of human life due to their medicinal and environmental uses as well as aesthetics and economic values. The stem, leaf, flowers, roots and the fruits of fruit crops have the highest potential of export (Kaczmarek *et al.*, 2015; Ipek *et al.*, 2016). Fruit collection from wild for food and domesticating food plants for multipurpose use is an age old practice in Indian subcontinent. The rich diversity in Chhattisgarh besides providing timber, firewood, fodder, they serve as insurance in periods of food scarcity also provides nutritious food, and also income to tribals and poor people living close to forests and rural areas.

Quite often, these wild and underutilized fruit crops are nutritionally very rich and of great medicinal value which can play a significant role in addressing nutritional needs while also adding value and generating extra earnings for the rural communities. Wild and underutilized fruits are mostly high in antioxidants and nutrients and due to these significant levels of astringency and acidic character of the fruits are not widely known and remain underutilized. There is an urgent need to work towards diversification and popularization of such underutilized fruit crops is urgently needed. Hence by establishing appropriate processing, storage and marketing methods for these minor fruits, such as transforming them into a variety of value added products.

Objective:

The objective of the study is to examine the economic empowerment of rural sector through the value addition of wild and underutilized edible fruits found in the region. This paper emphasizes on the vision required for a rural sector, opportunities for generating income through value addition of wild and underutilized edible fruits found in the Bastar region viz. *Phoenix sylvestris*, *Phyllanthus acidus*, and *Schleichera oleosa* (Lour.)

Value addition

Value addition is the process of achieving a high price of a primary commodity through changing their form, colour and other such methods to increase the shelf life of perishables. Wild and underutilized fruits have a lot of potential for processing and value addition into products like jam, jelly, preserves, candies, confectionary, pickles, fruit drinks, and so on. Fruits & vegetables are important for nutritional requirements of human beings and therefore it is necessary to make them available for consumption throughout the year in the form of processed or preserved form. Also processing ensures employment to larger section of unemployed youths and women along with preventing the post-harvest losses to meet the nutritional & food security of the growing population. Various recipe preparations from wild and underutilized fruits and some of the value added products have been discussed below:

1. *Phoenix sylvestris*

The *Phoenix sylvestris* fruits are inferior to the true dates but they are used as such, and are generally called "wild date palm" to distinguish it from the closely related *Phoenix dactylifera*, which is known as "date palm", they are locally known as "chinnd". Fruits are oblong 1.4 to 1.7 cm long, 0.9 to 1.1 cm in diameter, green in color which changed to yellow or brown after ripening. The fruit of palm developed in bunches of approx. 1.5 kg and a bunch of fruits contained 150-200 fruits (Zaid *et al.*, 1999). Robert, (2016) explained sugar and alcohol are made from wild date palm flowers and jelly is made from the fruits in India. Kumar, (2015) reported that this palm is a major source of sugar in India, and the sap is sometimes fermented into a drink called "toddy," which explains the names "sugar date palm" and "toddy palm." In India, sugar and alcohol are made from wild date palm flowers and jelly is made from the fruit investigated Robert, J.N. *et. al.*, (2010).

Processing of *Phoenix sylvestris* (wild date palm fruit) into a value added product

Flow chart of *Phoenix sylvestris* (wild date palm fruit) Sweet balls (Ladoo)



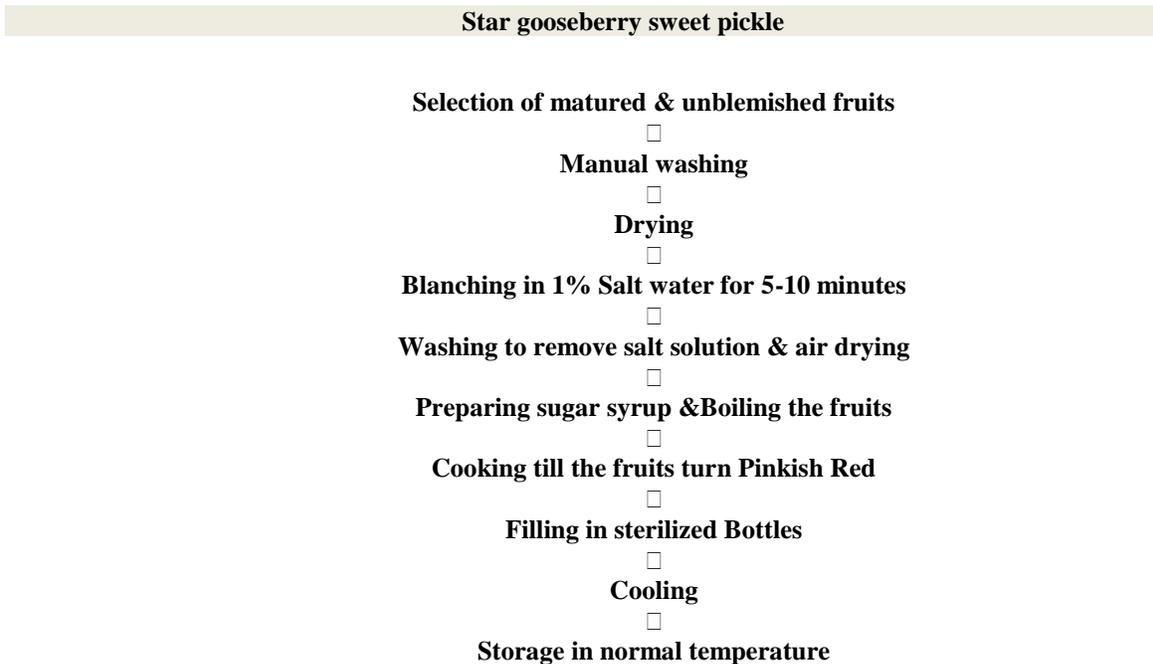


***Phyllanthus acidus* (Star Gooseberry):**

Phyllanthus acidus is an annual erect little branched herb, 10-50 cm high. *Phyllanthus acidus*, named as gooseberry or star gooseberry in English and sriamla in hindi, and locally as rani amla is an edible small yellow berries fruit in the Phyllanthaceae family. Fruits are borne in loose clusters, are pale yellow or white, waxy, crisp and juicy, and very sour, found in Bangladesh, South India, and Southeast Asian countries. The medicinal activities of *Phyllanthus* species are antipyretic, analgesic, anti-inflammatory, anti-hepatotoxic and antiviral (Unander *et al.*, 1995; Morton (1987) reported that *Phyllanthus acidus* fruit is oblate with 6 to 8 ribs, pale-yellow to nearly white when fully ripe; waxy, fleshy, crisp, juicy and highly acid. Tightly embedded in the center is a hard, ribbed stone containing 4 to 6 seeds. The fruits are small, roundish but deeply lobed and the colour is light green to yellowish-green analyzed Mazumdaar (2004).

Processing of *Phyllanthus acidus* (star gooseberry) into value added product

Flow chart for preparation of *Phyllanthus acidus* sweet pickle



***Schleichera oleosa* (Kosum or Oken)**

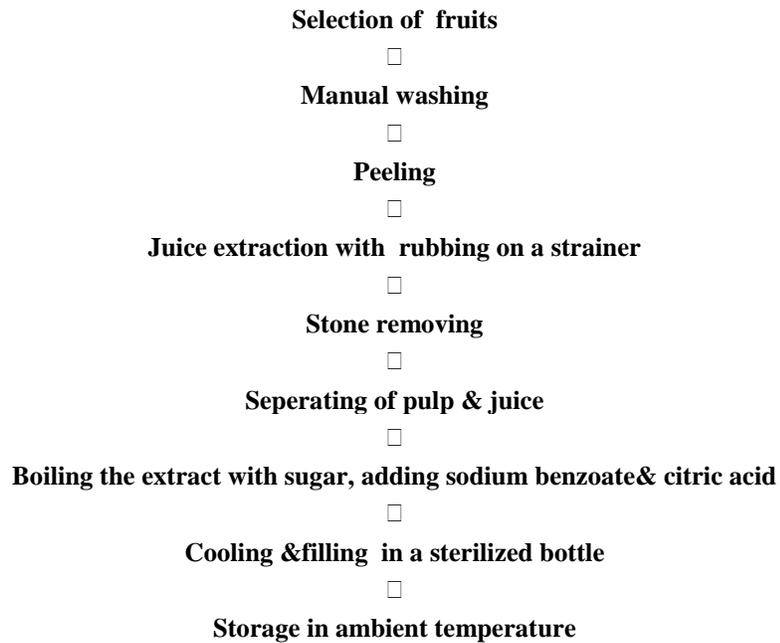
Schleichera oleosa (Lour.) Oken is a tree found in the deciduous forest of the Western Ghats region. The *S. oleosa*, popularly known as Kusum is a well-reputed deciduous to evergreen tree up to 40 metres tall having compound and paripinnate leaves. The inflorescence is axillary panicles, flowers are polgamodioecious and sessile. Fruits are 1-2

seeded, ellipsoidal to subglobular berry. The tree consists of a branched tap root system. Different parts of this plant have been used in the indigenous system of medicine since ancient times (Iwasa, 1997; Kundu, 2011). The shape of the fruit *Schleichera oleosa* broadly ovoid to sub-globular, 15 × 13 mm long berry and the base of the fruit is narrowed and apex pointed. Seeds are subglobular, 12 × 10 mm. The fruits are hard crustaceous and smooth or slightly spiny. Inside the fruit contains one seed or sometimes two. The seed is rich in oil observed Saha *et.al.*, (2010). Fruit indehiscent, drupaceous, smooth or echinate 2.5 cm long seed compressed, brown, 2 cm long. New leaves are light pinkish (Khan and Alam, 1996).

Processing of *Schleichera oleosa* (Kusum) into value added product

Flow chart for preparation of *Schleichera oleosa* jam

Schleichera oleosa (Kusum) Jam



CONCLUSION

The present study was undertaken to explore the post harvest potential of wild and underutilized fruits for the development of various value added products viz. *Phoenix sylvestris*, *Phyllanthus acidus*, and *Schleichera oleosa* (Lour.) Conservation of indigeneous traditional knowledge these wild and underutilized edible plants requires relevant management and utilization. Due to lack of scientific understanding of the non destructive harvesting methods, optimum time of harvesting, conservation, collection, utilization of these nutritional and economically important species leads to the great wastage and underutilization of these minor fruit species. Modern Techniques for preparation of different value added products from wild and underutilized fruits have been standardized in this paper. From the present documentation it is evident that, value added products can be prepared from *Phoenix sylvestris*, *Phyllanthus acidus*, and *Schleichera oleosa* (Lour.) fruit species, The value added products prepared from the selected wild and underutilized fruits may have industrial applications and can be promoted for commercialization of technologies. The region has a rich diversity of Wild and underutilized fruit crops and their production and consumption has been decreased as compared to the past, also Present horticultural, agricultural, and infrastructure developments may have the impact on consumption and indigenou traditional knowledge of the wild and underutilized edible fruits in this region. Thus, there is an urgent need to shift the focus on their domestication, agro-processing and value addition for complete utilization of their nutritional value, promotion for commercialization of technologies for promoting SHGs and young entrepreneur and open avenues of opportunity for economic benefits to enhance food security in the region.

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