

Traditional knowledge on fruit pulp processing of *Lapsi* in Kavrepalanchowk district of Nepal

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Indigenous technical knowledge (ITK) on the processing of fruit pulp of multipurpose tree *Choerospondias axillaries* (Roxb.) Burt & Hill locally known as *Lapsi* has been communicated. It is a potential agro- forestry tree species for income generating and nutrient supplementation in the mid hills of Nepal. Farmers normally process the fruits for their household needs as pickles and chutney, etc. by crushing and boiling the fruits, whereas entrepreneurs purchase the fruits from growers and produce varieties of edible pulp cake indigenously called *Titaura* items for selling in the market of Nepal as well as neighbouring countries. It has been found instrumental to raise the socio- economic status of the rural people.

Keywords: Kavrepalanchowk, *Choerospondias axillaris*, Fruit pulp processing, *Lapsi*, *Titaura*, Nepal
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Kavrepalanchowk is one of the districts in Nepal, which has the total area of 1396 sq km. There are altogether 75 such districts in the country. It lies between latitude 27°21'-27°42'N and 85°23'-85°49'E longitude. Its altitudes vary from 200-3018 m, whereas the average temperature ranges from 10°-31°C. It has been found that various traditional knowledge systems are being practiced since long by the inhabitants of different areas of Kavrepalanchowk (Fig. 1). The ethnic people of this district include *newar*, *magar*, *chhetri*, *pariyar*, *kami* (blacksmith), *sunwar* (goldsmith), *sarki* (shoe maker) and *kumal* (potter); they have a common Nepali dialect.

Lapsi (*Choerospondias axillaris*) is a wild, large, deciduous, dioecious fruit tree belonging to family Anacardiaceae. The tree is largely known for its delicious fruit in Nepal, for timber in China and for medicine in Vietnam. It is a native to Nepal growing within 850-1900 m and is distributed in China, Japan, India, Vietnam, Thailand and Happy Valley in Hong Kong¹. The trees producing pistillate flowers are locally called as '*pothi lapsi*' (female trees) and other producing staminate flowers are called '*bhale lapsi*' (male trees). Pistillate flowers have empty anthers and the staminate flowers are devoid of gynoecium². Its fruits are used in many rituals as an offering to the Gods & Goddesses. *Lapsi* trees are maintained in the grounds of many temples in the Kathmandu valley

where their fruits are particularly important to the survival of local monkeys and birds. It is a multipurpose tree that has higher income and employment generating potential without deteriorating the natural environment. It has been introduced in the agro-forestry for the economic development, supplement of fodder to livestock, light construction timber and fuel wood. Seeds are used as an excellent fuel in brick kilns and the bark has medicinal value³. Nepal is unique for processing and utilization of *lapsi* fruits. The fruits are rich in vitamin C content⁴, and are consumed fresh, pickled and processed into a variety of sweet, sweet & sour, hot & sweet, hot & sour tasty food products locally called *titaura*. *Titaura* products are usually prepared from

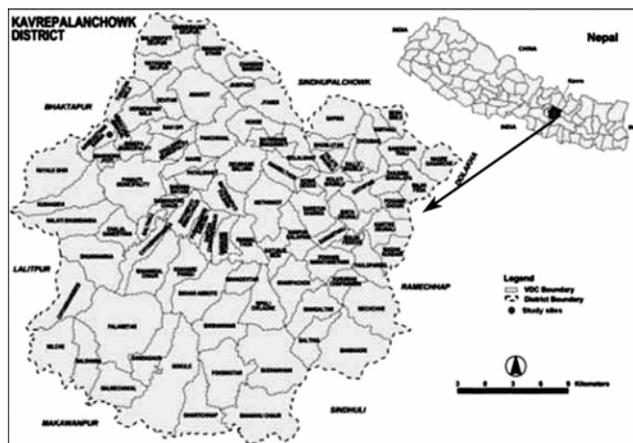


Fig.1 Location map of the study area

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the ripened fruit pulp and are popular in Nepal. Fruit products are presently consumed mostly within the country but have potential for international market promotion. The annual transaction of *lapsi* fruit in Kathmandu alone is estimated to be worth over 50 million Nepalese Rupees (approximately US\$0.65 million)⁵. *Lapsi* has great potential as a cash-generating tree for hill farming communities in Nepal⁶⁻¹⁰ thus, reducing farmers' reliance on subsistence food production and to improve their welfare¹¹.

Methodology

The study was conducted during 2005-2006 covering different localities of Nasikasthan Sanga, which is one of the VDC (Village Development Council) in Kavrepalanchowk district. Several visits were made to different parts of Nasikasthan Sanga at monthly and fortnightly intervals particularly during September to January. During field visits, information on traditional technical knowledge on processing of fruit pulp of *lapsi* were collected through oral interviews with proprietors and employee of *lapsi* processing cottage industries. Interviews have emphasized the harvest technique, categories and mode of trading of fruits. The overall techniques of pulp processing have been presented.

Results

Fruit harvesting generally takes place from September to January in the places like Phulbari, Panchkhal, Namobuddha, Panauti and Dhulikhel of Kavrepalanchowk as well as in Jiri, Charikot of Dholkha district and Chautara of Sindupalchowk district. Fruits are harvested before ripening during month of September and October but November onwards fruits are collected in ripened condition. Unripe fruits appear deep green, which turns yellowish on maturity. Skilled farmers climb on trees and harvest fruits using long wooden or bamboo sticks beating bunches of *lapsi* or manually shaking branches having fruits. The local farmers differentiate the fruits into four different categories on the basis of fruit maturity [*aghaute* (early) and *pachaute* (late)]; fruits quality [*hade* (non pulpy) and *bose* (pulpy)]; fruit size [*sano* (small) and *thulo* (bigger)] taste [*guliyo* (sweet) and *amilo* (sour)]. Farmers sell fruits directly to local consumers or processors at their farmyard, to middle man at farm gate or to processing cottage industries located in urban or semi urban areas.

Fruit processing is normally done at commercial, semi-commercial and domestic scale. Some farmers process it for their household needs as pickles, *sarbat* and *titaura* by crushing fruits in *dhiki* (wooden mortar & pastel), or by boiling, whereas entrepreneurs purchase the fruit from growers and produce varieties of *titaura* items for marketing. At commercial scale, there are nearly 80 processors of this fruit in the village Sanga of district Kavrepalanchowk. These processing cottage industries buy the fruits from the farmers of Phulbari, Panchkhal, Namobuddha, Panauti, Dhulikhel, Jiri, Charikot and Chautara. The different steps involved in processing of *lapsi* fruits are as follows:

The main ingredients for processing of *Lapsi* are mature fruits, salt, mustard oil and grind spices, viz. coriander, cumin, cloves, cardamom, chillies and pepper. Fruits are first washed to remove dirt and then boiled with salt in drums for 3-4 hrs. Salt play a crucial role in *lapsi* processing, it not only makes the *titaura* salty and tasty but also works as a preservative. After boiling, salty water is drained out and the pulp is then grinded followed by extraction of seed manually and is finally stored in an open ditch. Salty pulp is smeared over the wooden plank manually in order to make sheets of *titaura*. Finally, it

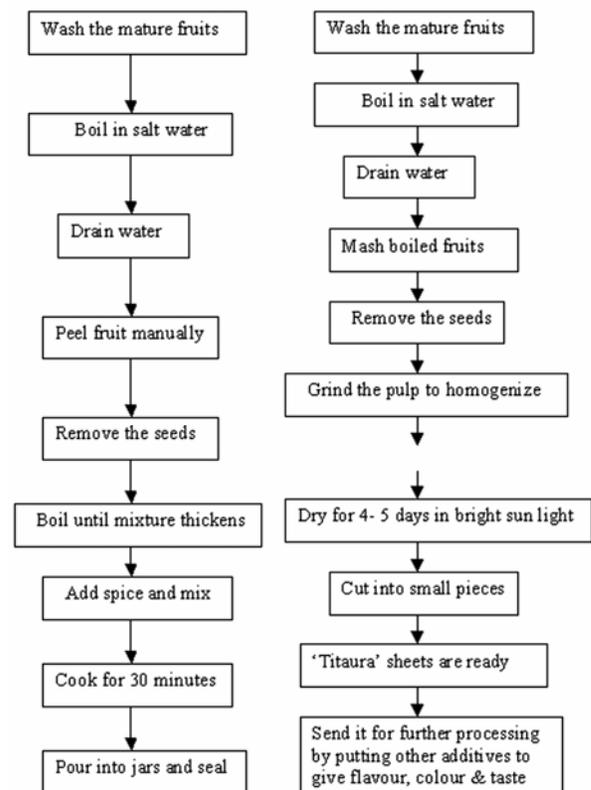


Fig.2 Processing for pickle and *Titaura*



Fig.3 Freshly collected fruits



Fig. 4 Fruits ready for boiling



Fig. 5 Salt to be used with fruits



Fig. 6 Extraction of seeds



Fig. 7 Storing of pulp in ditch



Fig. 8 Pulp grinder



Fig. 9 Pulp after grinding



Fig. 10 Pasting the pulp on plank



Fig. 11 Drying of pasted pulp



Fig. 12 Collection of *Titaura*



Fig. 13 Further drying of *Titaura*



Fig. 14 Extracted seeds form pulp

is sun dried for 4-5 days. These sheets of *titaoura* are sent to Bhakatapur for further processing by adding other additives (spices) to give them different flavour, colour and taste (Figs 2 & 3).

Discussion

Choerospondias axillaris is basically utilized for timber, fuel wood, fodder and fruits. Wood is used for rural house construction, agricultural implements and low cost furniture. However, it is mostly grown for its fruits. Fruits are eaten raw, pickled, processed into *titaoura* or sometimes used for alcohol production in domestic level. More than a dozen food items are prepared from fruits. Improved road access and established processing cottage industries have expanded the demand for *Lapsi* fruits. Fruits are slightly sour and citric in nature. It is mild in taste and can be eaten even when internal fever persists.

Lapsi is not only multipurpose tree but it is a fast growing early successional tree that has ecological implication to a greater extent. Rural folks of Nepal have taken it as one of the usual cash crops. They domesticate it in orchard, kitchen garden and in arable lands⁸. It is also grown in community forest, avenue forest, and leasehold forests. Its introduction as one of the tree species in agro-forestry is gaining popularity day by day. The selling places of edible items made from *lapsi* pulp are known as *pau-bhandar*. Regular annual income generation by the tree has great positive impact on the poverty alleviation of indigenous people in general. Small-scale employment opportunity in the *lapsi* processing cottage industries to local farmers has created the productive utility of farmer's off-season duration. The duration of harvest, selling and processing of *lapsi* fruit does not coincide with critical farming practices. The balance of vitamin C in Nepalese dietary through different items of *titaoura* can be considered as a great contribution of *lapsi* in the health sector.

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