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MYTHS AND FACTS OF GUGGAL GUM TAPPING

Guggal [*Commiphora wightii* (Arn.) Bhand.] is small tree or shrub belonging to family *Burseraceae*. The species is endemic to the arid western parts of the country such as, Gujarat and Rajasthan (Atal *et al.*, 1975). Mostly it is found growing on the rocky, hilly tracts and sloppy terrains of some rivers. It is also found in Sind and Baluchistan provinces of Pakistan. In fact, at present the major commercial demand for the guggal gum is met with import from Pakistan. Once tapped, the tree exudes an oleo-gum-resin (guggul) which has anti-inflammatory, anti-rheumatic and hypocholesterolemic activities (Satyavati, *et al.*, 1969) and also used in preparation of incense. There is report of 51 metric tons of guggal gum production during 1963–64 in India (Atal, *et al.*, 1975). However, the production has dwindled with decline in the natural plant stand. Soni (2008) identified four major reasons of reduction in gugal plant population *viz.* (i) habitat destruction (due to agriculture, mining, etc.), (ii) desertification and overgrazing, (iii) overexploitation and faulty tapping techniques, and (iv) slow growth rate and poor seed germination of the species. In the present study, the authors tried to summarise information available about guggul tapping in the literature and from the local inhabitants.

It is reported that gum tapping is mainly done by the tribals. They make incisions on the stem and apply a paste which invariably contains oleo-gum-resin (guggul) along with urine of horse or wild ass and copper sulphate (Atal *et al.*, 1975; Dalal and Sriram, 1995). This method is known to produce 3–4 times more gum compared to normal tapping but it results in death of the tree. As attributed by Soni (2008) death of the tree is due to copper toxicity. Deep incision made by the local communities is also thought to be injurious for the tree. Bhatt *et al.* (1989) developed an improved tapping method using 'Mitchie Golledge knife' and application of ethephon. They claimed an increase of 22 times in oleo-gum-resin production by this method over traditional one. In addition, the plants remained healthy. Conflicting reports do exist about the optimum time for tapping. Atal *et al.* (1975) reported that tapping season for guggul was between November and December (cold season) and collection can be made till May–June (hot season). Bhatt *et al.* (1989) reported that the favourable period to obtain higher guggul yield is April to May.

From an extensive survey, we have learnt that many of the reports hold true while some does not work, at least, at the places (Kachchh, Dwarka and Anand) from

where we collected data. At present, tapping for guggul is done in non-forest areas of Gujarat. However, it is almost absent in Rajasthan; possibly low plant density increases extraction cost which may be the cause for hesitation of local people for tapping. At present, Gujarat is the major producer of the guggul and it is marketed through state controlled Gujarat State Forest Development Corporation Ltd (GFDCL).

It is believed by the local people that the mastery of guggul tapping was first gained by 'Sama' communities from Khavra regions of Rann of Kachch. Hence, many folk lore are associated with them. People from Sabarkantha districts, where tapping is not practised, is of the opinion that the 'Sindhi's (the language used by the Sama) can extract guggul overnight from the plant by injection which kills the plant subsequently. Even, it is widely believed that others can not match with Sama in guggul tapping. Other communities like *Sumra* and *Koli* are also engaged in guggul extraction. People who extract guggul are not solely dependent on this profession. Mostly they work as agricultural labourer and perform tapping when they are free.

Tapping is mainly confined in Nakhatrana, Lakhpat and Bhuj talukas of Kachchh district. People from Sama community are sometimes hired by village bodies (panchayats) from different places for tapping in their localities. Though the detail techniques vary even within the communities the techniques followed by all these communities have some commonalities. Tapping is done during November–February and collection continues till March–April. Usually, they tap a plant of more than 1 m height with considerable stem thickness (> 4 cm diameter). A suspension of guggul in water or urine is prepared in such a proportion that it makes a thick suspension (our estimate is 20–25 g guggul in 30–35 ml liquid). However, many do not use urine as it is *haram* (unlawful) in Islam or, inauspicious in Hinduism. Guggul collected just before tapping serves for initial tapping. Freshness of guggul is important for tapping success *i.e.* lesser the time between guggul collection and tapping, higher is the success rate. 'Fotka' – mass of guggul aggregated at the twig tip, is considered best for initial tapping. Incision is made with the help of a tool very similar to khurpi. It is made of soft steel, with a rectangular blade of 8–10 cm length and 3–4 cm width. Some prefer to have a long handle for ease of tapping in the thorny bush. Before tapping, some also perform a ritual '*pani chadana*'. The tapping tool is heated by

putting in flame and then cooled either with water or guggul suspension. The khurpi is then dipped in the guggul suspension and incision is made. In case of big trees, main trunk as well as several places on the branches are tapped. Smaller ones (1 m height) receive single cut at the main trunk. Incisions are usually bark deep only as deeper cuts hamper guggul oozing. Usually tapping is done on the west side of the stem where direct sun light does not reach. Weather plays an important role in tapping success. Local people believe that fog in the evening and clear sun in day time are ideal for tapping. Extreme cold (temperature below 10°C) and hot (above 40°C) weathers are not favourable. South wind is considered most favourable for guggul oozing while wind direction from the north hampers tapping success. Tapping with ethephon, hydrochloric or sulphuric acids, etc. do not induce guggul flow as obtained by traditional methods.

Within 3–7 days after tapping guggul starts oozing initially, as cream to light yellow colour viscous fluid and later solidifies. It forms a lump and often in vermicular pieces. Solidified guggul varies in colour and appears in shades of pale yellow to dark brown and also in dull green. Within 10–15 days after tapping the solidified guggul is collected. Subsequent collections are also made as guggul continues to flow from the wound. It is detached from the plant surface by hand or with the help

of tapping tool itself. Collected gum is thereafter cleaned by removing adhering bark, soil, etc. by carefully rubbing it against a hard surface and graded for marketing.

The best grade is free from any foreign material and in large lump. Second one is contaminated with bark, sand, soil, etc. The most inferior one is mixed with all foreign materials and in small pieces only. The produce is packed in gunny bags and sold to GFDCL or agents identified by it. High demand for the raw drug has resulted better price for guggul. The present GFDCL buying rate for best grade of guggul is ₹ 250 per kg (compared to ₹ 3 per kg during 1975, as reported by Atal *et al.*, 1975).

After successful tapping, oozing spreads to other parts of the plant irrespective of injury caused. Bark turns brown and later dries up and the plant faces a slow death. Even, termite attack is also prevalent on the tapped plants. Some believe, low availability of moisture during and after guggul exudation is the main cause for death. However, plants at the bank of rivers (high soil moisture) and on the rocky hillocks (low soil moisture) when tapped, faced similar consequences – slow death. National Medicinal Plants Board, New Delhi has funded several projects on this species and we hope in near future effective formula will emerge for guggul extraction without harming this important species.

References

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