

## Short Communication:

# *Jagal*, a traditional health food at Khadi Fair in Udaipur, Rajasthan, India

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**Abstract.** Jain V. 2021. *Short Communication: Jagal, a traditional health food at Khadi fair in Udaipur, Rajasthan, India. Asian J Ethnobiol 4: 37-41.* Fairs and festivals are important to reflect traditional knowledge about various cultural, dietary, and healthcare practices. India has a rich legacy of cultural diversity, confluent in cuisine diversity. Every year, Rajasthan Khadi and Village Industries Board organizes the Khadi fair in different districts of Rajasthan to exhibit and sell the products developed by artisans and local people of the state. Ethnobotanical surveys of the Khadi fair held at Udaipur city, Rajasthan, were carried out for the first time to document traditional health food items being sold in the fair. Semi-structured interviews conducted with sellers and consumers in the surveys revealed the mode of preparation, rate, and intended use of a hitherto unreported traditional health food locally called '*Jagal*.' It is a plant-based product developed mainly from sesame seeds, dried coconut kernel, and jaggery and consumed as a nutritious health food by urban mass and as a reliever of joint and back pain in older adults. Detailed scientific assessment of nutritional and therapeutic benefits of '*Jagal*' needs to promote this food on international canvas as a dietary nutraceutical.

**Keywords:** Coconut, fair, jaggery, joint pain, nutraceutical, sesame

## INTRODUCTION

India is a land of diverse ethnic communities that utilize nearby growing biodiversity to fulfill daily needs and perform many socio-cultural rituals and customs (Jain 1999; Jain and Jain 2016). Rajasthan is India's largest state, covering 10.4% of the total geographical area, having rich floristic and ethnic diversity. Local people utilize many plant species in Rajasthan as dietary therapeutic agents. Efforts have been made to document traditional knowledge about those medicinal dietary recipes in the region (Katewa and Jain 2006). Yet, exhaustive ethnobotanical explorations are still required to gather information about traditional and indigenous knowledge dimensions scattered among various parts of the state. Udaipur is a tribal-dominated district situated in the southern part of Rajasthan. The Aravalli hills surround it with a rich flora creating much scope for ethnobotanical studies (Tiagi and Aery 2007; Katewa and Jain 2006).

The use of food as a therapeutic agent in the diet is part of many cultures, and edible plants having healing properties are one of the most utilized foods for this purpose since ancient times. A rich wealth of traditional knowledge associated with plants which include certain food products in diets to preserve health, exists among indigenous communities. These healthy diet recipes are inculcated among them traditionally. Several Ethnobotanists worldwide are exploring this arena to demonstrate the concept of food as medicine and medicine as food' prevailing among various ethnic communities

(Bhat 2012; Pieroni and Price 2006; Etkin and Ross 1982; Johns 1999).

The interdisciplinary nature of Ethnobotany is reflected in the cultural integration of plants in fairs, festivals, worship, ornamentation, paintings, proverbs, personal names, etcetera (Jain 2017a). Fairs and festivals are part of Indian cultural heritage and display various products and activities. Some of the fairs are organized for religious reasons, some on the arrival of new seasons, and some say multiple artifacts made by local artisans (Jain 2016, 2017b).

Rajasthan Khadi Ghramodyogh Board (Rajasthan Khadi and Village Industries Board- RKVIB) is a state setup working under Khadi & Village Industries Commission (KVIC) which is an initiative under the Ministry of Micro, Small and Medium Enterprises, Govt. of India for the promotion of Khadi clothes all over the country (Website 1). Khadi is a handspun and hand-woven cloth made famous by M.K. Gandhi for self-reliance and economic upliftment of rural people of India (Website 2). RKVIB organizes a Khadi fair in December at Udaipur, Rajasthan, for a fortnight. Various products of Khadi and products developed by multiple small-scale villages industries are exhibited for sale. These products include clothes made from Khadi cotton, silk, and wool in sarees, bedsheets, shawls, woolen jackets, caps, towels, etc. Besides, herbal medicines, cosmetics, honey, homemade pickles, snacks like 'papad,' 'namkeen,' and traditional food items prepared by local people are also sold at the fair.

Documentation of traditional dietary healthcare practices at fairs can help develop nutraceutical products.

For this purpose, ethnobotanical surveys were carried out in Khadi fair held at Nagar Nigam Prangan, Town Hall at Udaipur city, India in December 2018, first documented

## MATERIALS AND METHODS

### Study area

Udaipur district, earlier known as 'Mewar' region, is bounded by Rajsamand district in North, Chittorgarh, and Pratapgarh districts in East, Sirohi and Pali districts in West and Dungarpur district in South. It has a total area of 11,724 square kilometers with an urban population of 60,8426 residents. There are 11 tehsils in Udaipur city, having 2,479 villages with a rural population of 245,9994 people. It possesses a total Scheduled Tribe (ST) population of 152,5289, which is 49.7% of the total ST population (13.5%) of the state (Census of India 2011). Bhil, Garasia, Kathodi, Damor, and Meena are a few main tribes dwelling in Udaipur city. It possesses mainly dry deciduous forests (Tiagi and Aery 2007).

### Collection of data

For this purpose, all the stalls of the Khadi fair held at Udaipur were visited for five days at different times in a day, and it was found that a traditional health food called 'Jagal' was being sold at five stalls in the fair. Each of those five stalls was managed by one male and one female between 25-40 years. These ten sellers came from a nearby rural Udaipur city (Girwa, Vallabh Nagar, and Mavli tehsils).

Information about 'Jagal,' preparation technique, ingredients, their local names and procurement regions, quantity recommended for consumption, selling rates, and uses and therapeutic benefits associated with its consumption was collected from those sellers via semi-structured questionnaires considering them as qualified informants. Photographs of the ingredients of 'Jagal' were taken, and its preparation process was noted down with the consent of the sellers.

Moreover, the perception of 25 consumers, aged 25-75 years (five each from those five stalls in a day) who were willing to participate in the survey, irrespective of their gender, caste, religion, and education, was also noted down about the efficacy and reasons behind purchasing of 'Jagal.' All the interviews were conducted in the Hindi language. Prior informed consent was always obtained verbally before interviewing each informant.

Correct scientific names and family of plant ingredients of 'Jagal' are given in the Results, which was ascertained with the help of details provided in Flora and other relevant literature (Tiagi and Aery 2007; Jain and Jain 2018; The Wealth of India 1972). Recent scientific nomenclature was adopted for the botanical identities of plant materials ([www.theplantlist.org](http://www.theplantlist.org)).

## RESULTS AND DISCUSSION

India has witnessed wide diversity in cuisine, ingredients, preparation, and processing techniques established over many generations. Many of the traditional foods in the country are also known for their therapeutic effects. They could be called functional foods or nutraceuticals by providing nutrition and pharmaceutical actions (Sarkar et al., 2015). Therefore, documentation of traditional knowledge about ethnic food is helpful for health-conscious citizens globally, and in this regard, the present study keeps the significance as a small effort.

The survey revealed that besides the popular winter sweets 'Gajak' and 'Rewri' (Jain 2020), five stalls were selling a hitherto unreported traditional health food product 'Jagal' at the rate of Rs. 300/- per kg in Khadi fair (Figs. 1-6). 'Jagal' is a food product having semi-solid consistency and consists of three primary ingredients which are, 'Til' (Sesame): seeds of *Sesamum indicum* L. (Pedaliaceae), 'Khopra' (Coconut): dried endosperm of *Cocos nucifera* L. (Arecaceae) and 'Gur' (Jaggery) developed from stem juice of *Saccharum officinarum* L. (Poaceae). Local names of these plant ingredients are mentioned in a single high-reversed-9 quotation mark. The interesting observation was that these three ingredients were being mixed in a ratio of 2: 0.5: 1.5 respectively, one after another in an electric power based 'Ghani' - a machine in which these ingredients were poured in the circular mortar and crushed by electric driven pestle (Figures 2-3). After that, small pieces of different dry nuts such as Almonds (*Prunus dulcis* D.A. Webb), Cashew nut (*Anacardium occidentale* L.), Pistachio (*Pistacia vera* L.) as well as Raisins (*Vitis vinifera* L.) and Muskmelon (*Cucumis melo* L.) seeds were added to it, and 'Jagal' was ready for consumption. Higher rates of Rs. 500/- per kg were observed for 'Jagal' mixed with more quantities of dry nuts.

White and Black Sesame seeds were used on two stalls to make 'Jagal' (Figures 5-6). The rate of 'Jagal' made from black Sesame seeds was comparatively higher than 'Jagal' made from white Sesame seeds, i.e., Rs. 400/- per kg. Except for sesame, dry nuts and coconut were procured from other parts of the country due to unsuitable climatic conditions of Rajasthan.

Markets are effective means for exchanging cultural information and selling several products. They have been the object of ethnobotanical studies worldwide, and exciting data have been retrieved (Padoch 1988; Pochettino et al. 2012). Similarly, Fairs also provide space for many rural and local people to exhibit their traditional art, craft, and culinary skills (Jain 2017b). In the present survey, both males and females managed the stalls and came from villages located within 20-50 km periphery of Udaipur. Sellers also informed that the recipe of 'Jagal' is known to them through their elders as they used to consume this product in winters and are selling it in urban areas. This depicts the transmission of traditional knowledge from the elderly to the young generation of the rural regions and then to urban areas through these kinds of fairs and demonstrates the importance of holding such fairs in pluricultural urban areas to provide access to various

traditional products not frequently available in cities. The organization of fairs in urban areas is also important for providing a platform for rural people to demonstrate their skills, promote traditional culture, and generate additional income. However, reasons for the temporary migration of rural people to urban areas need to be searched through intensive urban ethnobotanical studies (Hurell and Pochettino 2014).

'*Ghani*' represents traditional oilseed milling technology with a circular mortar and good pestle, which moves with the movement of animals in a circular ambit so that oil comes out of seeds. Regional variations could be observed in the '*Ghani*' design depending on oilseeds available in a particular region (Patel 1943; Chaudhuri and Selvaraj 1985). Nowadays, these animal-driven traditional '*Ghanis*' are replaced mainly by electric power-based '*Ghani*'s.' In the present survey, all five stalls used these electric '*Ghanis*' to make '*Jagal*' (Figure 1). Besides, they were also selling Sesame oil (extracted through these '*Ghanis*') at the rate of Rs. 200/- per liter (Figure 4).

Sellers recommended daily consumption of at least 100 g of '*Jagal*' for a week for an adult person and suggested not taking water after half an hour of its consumption. This food is especially beneficial for people with joint pain, back pain, weak bones, or rheumatoid arthritis illnesses. Further, they informed that its consumption generates heat in the body, which is beneficial in tolerating cold. Therefore, they suggested it be consumed as a health vitalizing food in the winter season. They further informed that it remains fresh for 10 days if kept outside at room temperature in the cold winter season of December.

It was observed that consumers were readily purchasing '*Jagal*,' and some were consuming it on-site, and some were getting it packed for daily use at home. All the interviewed consumers affirmatively responded to the efficacy of '*Jagal*' as claimed by sellers. In December, the peak cold season in Udaipur, '*Jagal*' is one of the best nutritious food items to combat extreme low temperatures of 1-4° C. This might be due to the high calorific value of its ingredients. Out of 25, eight elderly consumers having joint and back pain responded positively in reducing these troubles after consuming '*Jagal*' daily for a week, highlighting the role of '*Jagal*' as food and medicine. There were mainly three reasons for purchasing '*Jagal*.' First, consumers could not prepare this food at home; second, its associated health benefits; third, its traditional recommendation by elders compelled them to purchase this food every year from the fair.

### **Medicinal properties of plant ingredients**

Fat-rich Sesame is also known as the 'Queen of oil seeds.' In scientific studies, sesame has also demonstrated various health-beneficial activities such as antioxidant, antimicrobial, anti-inflammatory, anti-diabetic, anticancer, anti-hyperlipidemic, hepatoprotective, and anthelmintic anti-leishmanial, gastro-protective, and vasorelaxant.

Sesame oil contains the furofuran lignan sesamin and analog sesamol with antioxidant properties that help inhibit cholesterol biosynthesis and tocopherol metabolism and excretion. Its seeds are rich in protein content with amino acids such as methionine and tryptophan. Given its therapeutic potential against metabolic, inflammatory, and infectious diseases, it can be considered beneficial for human consumption (The Wealth of India 1972; Moazzami and Kamal-Eldin 2009; Amoo et al. 2017). Moreover, informants also said that '*Jagal*' made from black Sesame seeds provides more health benefits than white Sesame seeds. However, they were unaware of both seedlings' comparative scientific chemical composition. This seems correct when calcium and phosphorus contents are compared, which are more in black Sesame seeds. The high calcium content might be the reason behind the improved bone health of older adults.

Coconut has a long history of use as food and medicine. In various scientific studies, the dried kernel has demonstrated antioxidant, antimicrobial, antimalarial, antihypertensive, and anti-diabetic properties. Coconut oil obtained from '*Khopra*' is rich in saturated fatty acids such as Lauric and Myristic acid and shown to have an anti-thrombotic effect by lowering tissue plasminogen activator and lipoprotein(a) concentration (Lima et al. 2015; Mandal and Mandal 2011; Müller et al. 2003). This property is, in fact, very significant in reducing the risk of a heart attack which is the primary cause of deaths during the winter season (Fares 2013). This might be another scientific reason confirming consumption of '*Jagal*' during winters as a healthy option. Most of the nuts used in '*Jagal*' are rich in mono- and poly-unsaturated fatty acids and have been shown to lower the risk of cardiovascular, diabetes, cancer, etc. (Sabaté and Ang 2009; Falasca et al. 2014). Therefore, their addition to '*Jagal*' makes it healthier food.

Another essential ingredient of '*Jagal*' is the traditional sweetener '*Jaggery*' obtained from Sugarcane juice. It is regarded as a medicinal and nutritious sweetener due to its various health benefits and vitality-enhancing properties in man. *Susruta samhita* mentions its highly nutritious properties and effectiveness in rheumatic afflictions and disorders of bile. It is a rich source of iron with other minerals such as calcium, phosphorus, thiamine, and nicotinic acid. It is also helpful in alleviating the harmful effects of arsenic and silicosis (Rao et al., 2007; Moses et al., 2012). Its cytoprotective, antioxidant, and anti-carcinogenic potential has also been demonstrated by Nayaka et al. (2009). Given this scientific evidence and chemical composition studies, it could be said that ingredients of '*Jagal*,' mainly Sesame and Jaggery are behind the improvement in joint pain and bone health as affirmed by the consumers of the present study. However, a detailed scientific assessment of the nutritional and medicinal qualities of '*Jagal*' is required to establish its role as a healthy food.



**Figure 1.** A. Electric *ghani*, B. Milling sesame seed in *Ghani*, C. Mixing of jaggery, D. Selling of *jagal* in the fair, E. *Jagal* prepared from white sesame seeds, F. *Jagal* prepared from black sesame seeds

Traditional food recipes play a vital role in the well-being of indigenous communities worldwide. The interest has been developed worldwide to find healthy dietary products to combat diseases arising from an unhealthy lifestyle, synthetic chemical-rich edibles, and polluted air (Milburn 2004). In this regard, documentation of traditional

health foods is an urgent need. The paper documents traditional knowledge about healthy food products being sold at the Khadi fair at Udaipur and reveals '*Jagal*' as a traditional health recipe. However, scientifically rigorous ethnobotanical surveys about '*Jagal*' from urban and rural socio-culturally heterogeneous communities and scientific

validation of health benefits of this traditional food are recommended. This preliminary survey may help recognize this traditional hitherto unreported health food product as a dietary nutraceutical on the international canvas. Further marketing strategies at a large scale could create employment opportunities leading towards the sellers' enhanced income, thereby improving their socio-economic status. Similar studies of fairs organized under the banner of KVIC in other states of the country could lead towards documentation of other important indigenous practices.

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