

Neglected and Underutilized Crop *Kachri*: A Powerhouse of Nutrition

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Introduction

The era of modernization has been engulfing every sector of mankind. The need to upload luxurious meals and fancy dishes on social media platforms has overtaken the need of promoting right nutrition. It has been observed that functionally important crops have the potential to reach the milestone of optimum nutrition. However, incorrect nutritional choices have become popular among youngsters and children. Surprisingly, the nutrition that is bought at high prices in terms of expensive fruits and vegetables might actually be obtained via various underutilized and neglected crops. *Kachri* is one such neglected and underutilized crop which has been researched upon recently and has shown to possess various therapeutic activities such as anti-oxidant, anti-cancer, anti-diabetic, anti-inflammatory, hepatoprotective, and anti-microbial (Gadekar, 2023; Panda S, 2016; Panda et al., 2018; Varadharajan et al., 2016; Yadav et al., 2022). This fruit which looks like miniature of watermelon due to green colour and black stripes on its peel is 4-5 cm long and 2-3 cm broad (Deepika et al., 2023). This fruit of semi-arid and arid region has been used extensively in Indian medicine system as well. The potential of various parts of *kachri* is well known to treat diseases in humans. However, its therapeutic potential is also applicable to animals and it has been used as in ethnoveterinary remedies for camels as well. Phytochemicals or plant secondary metabolites are well known for their therapeutic effects. Unravelling the intricacies of chemistry and pathways behind these phytochemicals is in the limelight of nutritional world. *Kachri* is spotted in the states of India near Thar desert has various pharmacological potential and abundance of these phytochemicals (Meena, 2016). Despite their therapeutic potential, some of these compounds and the crop itself remains unexplored. Ethnomedicinal knowledge and prescriptions related to medicinal plants have been passed down from generation to generation verbally. This knowledge has currently transformed the medicinal sector and health industries by becoming the basis of numerous research studies. The bioactive compounds in these plants have potential to serve the health of mankind in terms of both ameliorating the health by relieving the after effects and by preventing the disease itself. Botanical or plant

kingdom has various medicinal plant species with endless and multiple pharmacological or therapeutic potential such as *Physalis minima*, *Barbadensis miller*, and *Cucumis melo* etc (Manchali et al., 2021; Pandey et al., 2021). These potentials are not restricted to one family but are prevalent in various families of plants. Surprisingly, the understanding of ethnomedicines have put forward after screening and identification of various novel compounds having health benefits without any side-effects.



Fig 1: Fruit of *Kachri*

Nutritional value per 100gm

Cucumis callosus is a powerhouse of nutrition as it is rich in both macronutrients and micronutrients. According to a research study, it has moisture (2.5 ± 0.061 gm/100gm) total carbohydrates (61.214 ± 0.615 gm/100gm), proteins (23.846 ± 0.991 gm/100gm), crude fat (6.828 ± 0.165 gm/100gm), ash (11.8 ± 0.160 gm/100gm), and crude fibre (0.23 ± 0.165 gm/100gm). It is also rich in phytochemicals namely crude alkaloids (12.96 ± 0.086 gm/100gm), tannins (0.177 ± 0.007 gm/100gm), and saponins (7.28 ± 0.077 gm/100gm) (Mann et al., 2013).

Traditional uses and health benefits of *kachri*

Kachri is utilized as a coolant to prevent heat after effects. It is also used to treat the burns and abrasions. In some areas, the crop is used as a moisturizer. The application of *kachri* seeds for vermifuge activities, curing digestive disorders, and urinary problems is also well known. The use of this crop is however not restricted only to India but, it is used for its pharmacological potential in neighbouring countries as well i.e., Sri Lanka. In India, the stores of *kachri* in the

form of dehydrated forms are kept for utilizing or consuming the fruit during off season. Chutney, pickle, spicy powder, and panchkutta are some of the forms in which the fruit of *kachri* is consumed. *Gonds* (hill people) and *Baiga* (primitive tribe) of Madhya Pradesh, India still use *kachri* to cure numerous illnesses using age old traditional methods (Panwar et al., 2014).

Surprisingly, even though the fruit has numerous health benefits, the crop is yet underutilized. The market/mandi price of the fruit is also very low and varies from 10-25 Rs/kg throughout the season. Various pharmacological potential of *kachri* has been mentioned in table.

Table 2: Medicinal uses of parts of *C. callosus* and its method of application

Part of <i>C. callosus</i> utilized	Pharmacological potential for	Application method	Reference
Seeds	Bilious disorder	One tablespoon seeds in raw form	(Kumar, 2008)
Whole Fruit	Constipation in animals	Fruit in combination with <i>ajwain</i> (<i>Trachyspermum ammi</i>)	(Gupta, 2015)
Flowers	Expectorant and emetic	-	(Meena, 2016)
Seeds	Diabetes	Powdered seeds twice a day	(Ediriweera ERHSS, 2009)
Seed	Poisonous bites, bowel complaints, epilepsy	Oil of seeds	(Panwar et al., 2014)
Root	Skin eruption	Application of root paste	(Panwar et al., 2014)
Flowers	Heat strokes	Flowers immersed in water for 1-2 hours	(Panwar et al., 2014)
Fruit	Rheumatic and joint pain	Crushed fruit juice	(Panwar et al., 2014)

Various researches have put forward the fact the *kachri* has a good nutritional profile in terms of macro and micronutrients. In this era of silent pandemics, food sciences have been acting as a saviour in terms of functional foods and nutraceuticals. Therefore, extensive investigation of this medicinal plant with plenty of phytochemicals becomes a necessity.

Note: Authors are awarded scholar and assistant professor from Department of Nutrition Biology, Central University of Haryana, respectively.

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