

## SATTU IN AYURVEDA: A CLASSICAL REVIEW OF ITS NUTRITIONAL AND THERAPEUTIC SIGNIFICANCE

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### ABSTRACT

*Sattu* is a well-known traditional food in India, valued for its nutritional benefits and medicinal properties. It is also used to treat various ailments, promote overall health, and prevent diseases. This study aims to gather and analyze the available information about *Sattu* from various classical Ayurvedic texts. The primary Ayurvedic texts examined for this review include the *Brihatrayee*, which comprises the *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Samgraha*, and *Ashtanga Hridaya*, along with other Ayurvedic lexicons. These sources were critically analyzed to provide a comprehensive understanding of *Sattu*. *Sattu* can be prepared from grains or cereals, medicinal plants, or processed food items. When made from grains or cereals, it serves as a dietary supplement, while *Sattu* made from medicinal plants is used to address specific health conditions based on the therapeutic properties of the plants involved. *Sattu* is mentioned in nearly all classical Ayurvedic texts, which detail its various properties. It is recognized as a highly nutritious food, often consumed in the form of *Mantha*, a drink known for offering quick energy and strength.

**KEYWORDS:** *Sattu*, *Lajasattu*, *Saktu*, *Mantha*, energy drink, *Ayurvedic* food supplement.

## INTRODUCTION

In recent times, dietary habits, lifestyles, and environmental factors have been rapidly changing. People often follow food trends and advertisements without fully understanding the nutritional value or health benefits of what they are consuming. In India, the popularity of western foods such as soups, oats, flakes, pasta, pizza, noodles, and other foreign recipes has surged, but these foods often lack the nutritional benefits that traditional Indian foods offer.

One such traditional food that has stood the test of time is *Sattu*, a well-known food item in India. *Sattu* is not only consumed as a food but also serves as a medicinal remedy for various ailments. It is used as a dietary supplement for maintaining overall health and preventing several diseases. References to *Sattu* can be found in numerous classical Ayurvedic texts, where it is also referred to as *Saktu*.

*Sattu* can be made from a variety of cereals or herbs, either as a single ingredient or a mixture of different cereals and herbs. The properties and benefits of *Sattu* made from different cereals or herbs are detailed in several classical Ayurvedic textbooks.

## AIM

To compile and analyse the information regarding *Sattu*, available in various classical texts of Ayurveda.

## MATERIALS AND METHODS

Ayurvedic texts mainly *Brihatrayee* comprising *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Samgraha* and *Ashtanga Hridaya* were analyzed for the present review. Various Ayurvedic lexicons were also reviewed which provided the definite base for the study. All the analyzed data was scrutinized and re-arranged in making the framework of the narrative review of the present topic.

## OBSERVATIONS

### Definitions and Method of *sattu* preparation

In different classical texts of Ayurveda *Sattu* is explained as below:

- Roasted and dehusked barley powder is known as *Saktu*.<sup>[1-2]</sup>
- Cereals roasted and grinded by machine is known as *Saktu*.<sup>[3]</sup>
- Powder of roasted barley or other cereals is known as *Saktu*.

### Classical description of *Sattu*

Description regarding *Sattu* was found at various places in different scriptures of Ayurveda. It is shown in Table-1:

### Materials used for *sattu* preparation

According to classical texts of Ayurveda, *Sattu* can be made by different cereals or grains. It can also be made by using different herbal medicines according to need for treatment of various diseases. *Sattu* preparations of some cereals/grains (shown in Table - 2) or medicines/drugs (shown in Table - 3) or fruits (shown in Table - 4) or processed food articles (shown in Table - 5) or comb of cereals/grains or drugs directly mentioned in different classical texts of Ayurveda are shown in tables.

### General properties of *sattu*

General properties of *Sattu* as per different classical texts of Ayurveda are shown in Table - 6.<sup>[4-7]</sup>

### Properties of *yava sattu*

Properties of *Yava* (Barley) *Sattu* according to different classical texts of Ayurveda are shown in Table – 7.<sup>[8-11]</sup>

**Properties of *shali sattu*:** properties of *Shali Sattu* according to different *Acharyas* are Shown in Table – 8.<sup>[12-15]</sup>

**Properties of *Badara & Karkandhu Sattu*:** properties of *Sattu* made up of *Badara* (*Zizyphus jujube Lam.*) and *Karkandhu* (*Zygiphus nummularia W. &A.*) according to different *Acharya* are shown in Table – 9.<sup>[16-18]</sup>

**Properties of *Lajja Sattu*:** properties of *Lajja Sattu* according to different classical texts of Ayurveda are Shown in Table – 10.<sup>[19-21]</sup>

**Properties of *Yava-Chanaka Sattu*:** *Sattu* made by mixture of roasted *Yava* (barley) and *Chanaka* (chickpea) and consume it with ghee and sugar is the best remedy for summers.

**Rules for *Sattu* consumption<sup>[22-23]</sup>:** following indications and contra-indications are mentioned in different lexicons of Ayurveda for consumption of *Sattu*.<sup>[24-28]</sup>

- One should not leave *Sattu* unattended in the container.
- One should not consume *Sattu* without mixing it with *Ghee* and sugar, in night, after having meal, in large quantity, twice daily, interrupted with water intake and tearing with teeth.

- Excessive use of *Sattu* is mentioned as *Nidana* of *Abhyantra Krimi*(cause of worm infestation).<sup>[29-30]</sup>
- *Sattu* consumption is contra-indicated in *Tapatyaya* (end of summer season and starting of rainy season).<sup>[31]</sup>

## Tables

**Table 1: Description regarding *sattu* in various classical texts.**

S N	Text Name	Kritanna varga	Mishraprakrana	Dhanyakritannadi varga	Paanbhakshaya varga
1	BP	+	+	-	-
2	KN	+	-	-	-
3	MN	-	-	+	-
4	SN	+	-	-	+

BP-Bhavaprakasha Nighantu, KN – Kaide Nighantu, MN –Madanpal Nighantu, SN – Shodal Nighantu.

**Table 2: Grains/Cereals used for *Sattu/Saktu* preparation.**

	CS	SU	AH	AS	BP	KN	MN	SN	SS
Yava (Barley)	+	+	+	+	+	+	+	+	+
Godhum (wheat)	-	-	-	-	-	-	-	-	-
Shali (variety of rice)	+	-	-	-	+	+	-	+	-
Chanak (chickpea)	-	-	-	-	+	+	+	-	-
Masura(red lentils)	-	-	-	-	-	-	-	-	+

CS - Charaka Samhita, SU - Sushruta Samhita, AH – Ashtanga Hrdaya, AS – Ashtanga Samgraha, BP – Bhavaprakasha Nighantu, KN – Kaidev Nighantu, MN – Madanpal Nihantu, SN – Shodal Nighantu, SS - Sharangdhara Samhita.

**Table 3: Medicines (*Aushadha dravya*) used for *Sattu/Saktu* preparation.**

	CS	SU	AH	AS	BP	KN	MN	SN	SS
<i>Bhallataka</i> (Marking nut)	+	-	-	-	-	-	-	-	-
<i>Erkabeeja</i> (Elephant grass seed)	-	-	+	+	-	-	-	-	-
<i>Musta</i> (Nut Grass)	-	-	-	+	-	-	-	-	-

**Table 4: Fruits used for *Sattu/Saktu* Preparation.**

	CS	SU	AH	AS	BP	KN	MN	MDG	SN	SS
<i>Badara</i> (Jujube)	-	-	-	+	-	+	-	-	+	-
<i>Karkandhu</i> (variety of jujube)	-	-	-	+	-	+	-	-	+	-

**Table 5: Processed food articles used for *Sattu/Saktu* preparation.**

	CS	SU	AH	AS	BP	KN	MN	SN	SS
<i>Lajja</i> (Puffed rice)	+	-	+	+	-	-	-	+	-

<i>Prithuka</i> (Flattened rice)	-	-	-	-	-	-	-	-	-
<i>Kulmasha</i> (Kind of gruel)	-	-	-	-	-	-	-	-	-

**Table 6: General properties of *sattu*.**

Properties	CS	SU	AS	AH	SN
<i>Vatala</i> (Aggravate <i>Vata</i> )	+	-	+	-	+
<i>Ruksha</i> (Promotes absorption of excessive moisture from the body)	+	-	+	-	+
<i>Bahuvarcha</i> (Increases fecal matter/stool quantity)	+	-	-	-	+
<i>Anulomana</i> (Mild purgative action/regulate peristalsis)	+	-	-	-	+
<i>Sadya-Tarpana</i> (Substances that has the ability to produce satiating effect immediately)	+	-	+	-	+
<i>Sadya-Bala</i> (Provide strength instantly/quickly)	+	-	+	+	+
<i>Laghu</i> (Promote lightness in body/easy to digest)	-	-	+	+	+
<i>Hrdya</i> (Beneficial for heart/palatable and pleasing to mind)	-	-	-	-	+
<i>Deepana</i> (Digestion and metabolism enhancing)	-	-	-	-	+
<i>Lekhana</i> (Therapeutic scrapping)	-	-	-	-	+
<b>Disease alleviating properties of <i>Sattu</i> include-</b>					
<i>Kantha-Rogahara</i> (Cure throat diseases)	-	-	+	-	-
<i>Netra-Rogahara</i> (Cure eye diseases)	-	-	+	+	+
<i>Kshudhahara</i> (Overcome excessive hunger)	-	-	+	+	+
<i>Trishnahara</i> (Overcome excessive thirst)	-	+	+	+	+
<i>Shramhara</i> (Relieves fatigue)	-	-	+	+	+
<i>Chhardihara</i> (Cure vomiting)	-	+	+	-	-
<i>DahaShamaka</i> (Cure burning sensation)	-	+	-	-	-
<i>Gharm-artihra</i> (Relieve discomfort due to intense heat)	-	+	-	-	-
<i>Raktapittahara</i> (Cure epistaxis/bleeding disorder)	-	+	-	-	-
<i>Jvara-nashaka</i> (Cure fever)	-	+	-	-	-
<i>Vranahara</i> (Wound healer)	-	-	+	+	+
<i>Ghnanti-Santarpana</i> (Cure diseases due to over nutrition)	-	-	-	+	-
<i>KaphadoshaShamaka</i> (Pacify <i>Kaphadosha</i> )	-	-	-	-	+

**Table 7: Properties of *yava sattu*.**

Properties	BP	KN	MN	MDG
<i>Sheeta</i> (Promote coldness in body)	+	-	+	+
<i>Deepana</i> (Digestion and metabolism enhancing)	+	+	+	+
<i>Laghu</i> (Promote lightness in body)	+	+	+	-
<i>Sara</i> (Promotes mobility)	+	-	+	-
<i>Kapha-pittahara</i> (Pacify <i>Kapha-Pitta Dosha</i> )	+	+	+	-
<i>Ruksha</i> (Promote dryness in body)	+	+	+	+
<i>Lekhana</i> (Therapeutic scrapping)	+	+	+	+
<i>Balakara</i> (Provide strength)	+	-	-	-
<i>SadyaBalakara</i> (Provide strength immediately)	-	+	+	+
<i>Vrishya</i> (Eugenics/aphrodisiacs)	+	+	-	-
<i>Brimhana</i> (Therapeutic strengthening)	+	+	-	-
<i>Bhedana</i> (Drastic purgative)	+	+	-	-
<i>Tarpana</i> (Satiating)	+	+	-	-

<i>Madhura</i> (Sweet taste)	+	+	-	-
<i>Ruchikara</i> (Enhances taste)	+	-	-	-
<i>Pariname Balawaha</i> (Promotes strength after digestion)	+	-	-	-
<b>Disease alleviating properties of Yava Sattu include-</b>				
<i>Shramhara</i> (Relieves generalized fatigue)	+	+	-	+
<i>Kshudhanashaka</i> (Cure excessive hunger)	+	+	-	-
<i>Trishnanashaka</i> (Cure excessive thirst)	+	+	-	-
<i>Vranahara</i> (Wound healer)	+	+	-	-
<i>Netraroga hara</i> (Cure eye diseases)	+	+	-	-
<i>Gharamartaprashasta</i> (Best remedy for discomfort due to intense heat)	+	+	+	-
<i>Dahaartaprashasta</i> (Best remedy for burning sensation)	+	-	-	-
<i>Vyayamaartaprashasta</i> (Best remedy for discomfort due to exertion)	+	+	-	+
<i>Vataartaprashasta</i> (Best remedy for discomfort due to aggravated Vata)	-	+	-	+
<i>Hridya</i> (Beneficial for heart/palatable and pleasing to mind)	-	+	-	+
<i>Vatala</i> (Aggravate Vata)	-	-	-	+
<i>Kaphaamyaprashmana</i> (Pacify diseases due to <i>Kapha Dosha</i> )	-	-	-	+
<i>Santarpana</i> (Provide nourishment to the body)	-	-	-	+

Table 8: Properties of *Shali Sattu*.

Properties	CS	BP	MDG	SN
<i>Madhura</i> (Sweet taste)	+	-	+	+
<i>Laghu</i> (Promote lightness in body)	+	+	+	+
<i>Sheeta</i> (Promote coldness in body)	+	+	+	+
<i>Grahi</i> (Absorptive)	+	+	+	+
<i>Vahinida</i> (Stimulates digestion)	-	+	-	-
<i>Ruchikara</i> (Increases desire to eat)	-	+	-	-
<i>Pathya</i> (Wholesome)	-	+	-	-
<i>Balakara</i> (Increase strength)	-	+	-	-
<i>Shukrala</i> (Spermatogenic)	-	+	-	-
<b>Disease alleviating properties of Shali Sattu include-</b>				
<i>Raktapittaghna</i> (Cure bleeding disorder)	+	-	+	+
<i>Trishnaghna</i> (Cure excessive thirst)	+	-	+	+
<i>Chhardihara</i> (Cure vomiting)	+	-	+	+
<i>Jvarahara</i> (Cure fever)	+	-	+	+

Table 9: Properties of *Badara & Karkandhu Sattu*.

Disease alleviating properties of Badara & Karkandhu Sattu	AS	KD	SN
<i>Shramhara</i> (Relieves fatigue)	+	+	+
<i>Trishnahara</i> (Cure excessive thirst)	+	+	+
<i>Kalamhara</i> (Cure exhaustion without exertion)	+	+	+
<i>Hridaya</i> (Beneficial for heart/palatable and pleasing to mind)	+	+	+

**Table 10: Properties of *lajja sattv*.**

Properties	KN	MDG	SN
<i>Madhura</i> (Sweet taste)	+	-	-
<i>Laghu</i> (Promote lightness in body)	+	-	-
<i>Hima/Sheeta</i> (Promote coldness in body)	+	-	-
<i>Kashaya</i> (Astringent taste)	+	-	-
<i>Grahi</i> (Absorptive)	+	-	-
<i>Hridaya</i> (Beneficial for heart/palatable and pleasing to mind)	+	-	-
<b>Disease alleviating properties of <i>Lajja Sattu</i></b>			
<i>Shramanashaka</i> (Relieves fatigue)	+	-	-
<i>Ushanatanashaka</i> (Pacifies abnormal body heat)	+	-	-
<i>Anilanashaka</i> (Pacifies <i>Vata</i> )	+	-	-
<i>Pittashamaka</i> (Pacifies <i>Pitta</i> )	+	-	-
<i>Raktapittashamaka</i> (Cure bleeding disorder)	+	-	-
<i>Dahashamaka</i> (Cure burning sensation)	+	+	+
<i>Murshahara</i> (Cure syncope/fainting)	+	+	+
<i>Klamhara</i> (Pacifies exhaustion without exertion)	+	-	-
<i>Jvarhara</i> (Cure fever)	+	+	-
<i>Chhardihara</i> (Cure vomiting)	-	+	+
<i>Atisarahara</i> (Cure diarrhea)	-	+	+
<i>Trishnahara</i> (Cure excessive thirst)	-	+	+
<i>Vishanashaka</i> (Poison antidote)	-	+	-
<i>Pitta-Kaphahara</i> (Pacifies <i>Pitta-Kapha Dosha</i> )	-	-	-

**Therapeutic uses of *Sattu***

Though *Sattu* is a traditional functional food, it is also used as medicine for the treatment of various diseases. There are many therapeutic uses of *Sattu* alone or with combination of other drugs.

**DISCUSSION**

*Sattu* can be prepared from grains/cereals or medicinal plants or processed food articles. *Sattu* prepared from grains/cereals can be used as dietary supplement and *Sattu* prepared from medicinal plants can be used in various medical conditions or diseases as per the disease alleviating properties of the medicinal plant used for *Sattu* preparation. *Sattu* is prepared by roasting cereals or grains. Roasting is an *Agni Samskara* (Processing with fire). For *Sattu* preparation dry roasting of cereals is advised with heated sand. By dry roasting *Snehansha* (Oily content) and *Dravansha* (Moisture content) of the cereal is decreased. So cereal became *Ruksha* (Dry) and *Laghu* (Easily digestible). So due to increase in *Rukshata* (Dryness) and *Laghuta* (Lightness) by dry roasting it become *Vatala* (Increases *Vata Dosha*). For *Sattu* preparation, roasted cereals are transformed into fine powder. Fine powder can be absorbed



easily because particle size is directly proportional to bioavailability (i.e. smaller the particles size faster the absorption). Instant absorption of *Sattu* may be due to smaller particles size.

### Method of consumption of *sattu*

*Sattu* is advised to consume by mixing with *Ghee*, sugar and water. As *Sattu* is *Ruksha* (dry), *Vatala* (Increases *Vata Dosha*) in nature hence mixing with *Ghee*, sugar and water will reduce its *Rukshata* and also make it more palatable for consumption or may be due to excessive dry in nature, *Sattu* is very difficult to swallow without mixing with *Ghee*, sugar and water. It absorbs moisture of the buccal cavity and due to that it doesn't move easily. *Sattu* provides strength and instant energy, may be due to this specific combination.

*Sattu* should not be consumed by chewing with teeth or interrupt with water intake. This may be due to the fact that *Sattu* should get absorbed directly by metabolic bypass. By chewing digestive secretions may get mixed with *Sattu* and proceed it in metabolic process. Interruption with water intake may also affect its direct absorption or may also proceed it into metabolic pathway. Due to metabolic bypass it shows the *Sadya Santarpana* type of effect. *Sattu* is not advised to consume after having meal, it may be due to that as it is highly nutritious and complete food so if it is taken after meal it comes under *Adhyashana* (Over eating) and may impair digestive process or may causes conditions which are occurred due to over nutrition (*Atisantarpana*). *Sattu* is also not advised to consume twice in a day or in large quantity, it may be due to that as it is nutritious traditional food so its one time consumption in a day is sufficient to provide proper nutrition to the body or may be it produces excessive dryness if taken twice or more time per day. As *Sattu* provides instant strength and nutrition, medical conditions where patient is weak or unable to consume solid food and patient is advised to consume nutritious food in these conditions we can use *Sattu* for providing strength and proper nutrition to the patient. Other medical conditions where *Agni* (Digestion) of the patient is impaired we can advise *Sattu* as it is *Laghu* (Light) and *Deepana* (Stimulate digestion) i.e. easily digestible and enhance digestive strength. Conditions of physical exertion like in athletes where strength and instant energy is required for fast recovery from exertion, we can use *Sattu* in the form of *Mantha*, as it is *Sadya Balakara* (Provide strength instantly/quickly) and *Sadya Tarpana* (provide nutrition immediately) so it will help in fast recovery from fatigue. Excessive hot environmental conditions where energy loss is more, *Sattu* in the form of *Mantha* can be used as refreshing or energy drink.



### Mode of action of *sattu* in healthy individuals

*Sattu* is advised to consume by mixing with ghee, sugar and water. Ghee and sugar provide strength and energy. In case of *Mantha* preparation from *Sattu*, cereals/grains are processed twice, i.e. once with fire (*Agni*) and secondly with water (*Toya/Jala*). *Agni Samskara* (Processing with fire) makes cereals/grains *Laghu* and *Toya Samskara* (processing with water) provides it fluidity (*Sara Guna*) and friction during the process of mixing make it more *Sukshma* (Reduces particle size). Due to these *Laghu* (Lightness), *Sukshma* (Smaller particle size) and *Sara* (Fluidity) properties, *Sattu* get absorbed in the body quickly. So, if *Sattu* is consumed in the form of *Mantha*, it provides instant energy and strength.

### CONCLUSION

Ayurveda gives similar importance to both – *Ahara* (Diet) and *Aushadha* (Medicine). Ayurvedic dietetics involves various food preparations and drinks. *Sattu* is one such formulation described by almost every classical text. In classics various properties of *Sattu* has been described in detail. *Sattu* is a nutritious food and its description is found in the form of *Mantha* as a regular drink for instant energy and strength. *Sattu* is also used both internally and externally in the management of various disorders. There are certain guidelines given in the ancient text regarding consumption of *sattu* which make this formulation special. In current era when there is an increasing demand of products having both nutritional and medicinal values *sattu* can be considered as a perfect formulation.

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