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**Review Article**

# Food and medicinal aspects of *Amorphophallus* species

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**Abstract:** *Amorphophallus* species, a genus of plants belonging to the family Araceae, have been a vital part of traditional medicine and food systems for centuries. These plants are rich in nutrients and bioactive compounds, making them valuable for culinary and medicinal purposes. The edible parts, such as corms and tubers, provide essential nutrients, while the medicinal properties have been used to treat various health conditions. Studies have shown that *Amorphophallus* species exhibit anti-inflammatory, antioxidant, and antimicrobial activities, which have been utilized in traditional medicine to treat diseases and disorders. Therefore, the conservation and sustainable use of these plants are crucial to ensure their availability for future generations. Further research is needed to fully explore the potential of *Amorphophallus* species in modern healthcare, particularly in terms of their pharmacological and nutritional applications. This comprehensive study aims to provide an overview of the food and medicinal aspects of *Amorphophallus* species, highlighting their significance in promoting health and well-being. By exploring the traditional knowledge and modern applications of these plants, we can gain a deeper understanding of their role in human health and work towards harnessing their potential for improving human well-being. Ultimately, *Amorphophallus* species offer a promising opportunity for the development of novel foods and medicines.

**Keywords:** *Amorphophallus*, medicinal, nutritional, sustainable, traditional medicine

## Introduction

*Amorphophallus* species, a genus of plants native to tropical and subtropical regions, have been a vital part of traditional medicine and food systems for centuries (Islam et al., 2023). These plants are well-known for their distinctive morphological features and variety of bioactive compounds, which have been utilized to treat various health conditions and provide essential nutrients (Riaz et al., 2023). The edible corms and tubers, along with medicinal leaves and roots, have been utilized in numerous ways to promote health and well-being (Chua et al., 2010). The nutritional and medicinal properties of *Amorphophallus* species are closely linked, reflecting the holistic approach to health typical of traditional medicine systems (Swain et al., 2022). These plants are rich in vitamins, minerals, and antioxidants, making them a valuable part of traditional diets (Samtiya et al., 2021). Additionally, the bioactive compounds present in *Amorphophallus* species have been shown to possess medicinal properties, including anti-inflammatory, antioxidant, and antimicrobial activities (Shete et al., 2014). As interest in traditional medicine and natural products continues to grow, *Amorphophallus* species are gaining attention for their potential applications in modern healthcare (Dey et al., 2012). Research into the phytochemistry, pharmacology, and conservation of these plants is essential to unlock their full potential and ensure their sustainable use (Islam et al., 2023). By exploring the nutritional and medicinal aspects of *Amorphophallus* species, we can gain a deeper understanding of their role in promoting health and well-being and work towards harnessing their potential to improve human health (Swain et al., 2021).

## Methodology

The study was conducted comprehensively, with literature surveys complemented by field surveys in the Odisha state from 2022-25. Literature surveys were done using the Scopus, Crossref, Google Scholar, and Web of Science databases, which involved systematically searching and analysing published scholarly articles to gather information on the food and medicinal aspects of some *Amorphophallus* species. The data was tabulated with details on the nutritive and medicinal uses of the species (Jain et al., 2025).

## Results and Discussion

The comprehensive survey documented 14 *Amorphophallus* species of the Araceae family that possess nutraceutical properties. The study identified 8 species that have been used as food for a long time, as well as 10 species that are employed in the treatment of various health issues, including skin infections, sinusitis, jaundice, asthma, rheumatism, dysentery, and liver diseases. The results also show that different parts of the plants – such as the corm, tuber, and leaves – are utilized to prepare remedies. The various preparation methods and uses of these plant parts indicate the rich cultural heritage and traditional knowledge surrounding them (Table 1).

Nutritional significance: The *Amorphophallus* species are a rich source of nutrients, including vitamins, minerals, and antioxidants. The edible parts of these plants, such as corms, tubers, and leaves, offer essential nutrients that contribute to human health. For example, the corms of *Amorphophallus konjac* are high in fiber and have been used to make a variety of food products, including noodles and tofu.

Table 1: Food and medicinal properties of different *Amorphophallus* species

| Plant Name | Food values | Medicinal uses | Source(s) |
|---|---|---|---|
| *Amorphophallus bulbifer* (Schott) Blume (Figure 1) | The young stems and leaves are cooked as a vegetable.<br>Small pieces of fresh petioles and bulbils of this plant are cooked as vegetables with dry fish and taken with rice. | Corm is used to treat skin infections.<br>Tuber possesses antibacterial activity. | Swain et al., (2022); Reang et al., (2023) |
| *Amorphophallus paeoniifolius* (Dennst.) Nicolson (Figure 2) | The leaf and corm are edible.<br>The tuber can also be consumed as a balanced diet. | Tubers have antioxidant and anti-tumor activity.<br>Apical shoots are used to cure sinusitis.<br>Dried powder of the whole plant is mixed with curd to treat jaundice. | Behera et al., (2014); Dey et al., (2015); Swain et al., (2022); Antony et al., (2024) |
| *Amorphophallus commutatus* (Schott) Engl. | The fruits are eaten by koels and bulbuls. | Have hepatoprotective activity.<br>Tuberous roots are used to treat enlargement of the spleen, asthma, and rheumatism. | Shete et al., (2015); Islam et al., (2023) |
| *Amorphophallus konjac* K.Koch | The corms are edible and have rich nutritional value.<br>The flour derived from the corm is used to prepare noodles, tofu, and various types of snacks. | Antioxidant and laxative effect.<br>Corm flour is useful to reduce plasma cholesterol levels. | Islam et al., (2023); Jain et al., (2025) |
| *Amorphophallus brevispathus* Gagnep. | The tuber is a primary food source for some communities, particularly in rural and tribal areas. | It is useful in treating dysentery and piles. | Present study |
| *Amorphophallus aphyllus* (Hook.) Hutch | The tubers have been historically used as a food source during | Plant is considered a digestive aid and can be used to treat conditions like | Present study |

| | | | |
|---|---|---|---|
| | periods of food shortages. | indigestion, haemorrhoids, and constipation. | |
| *Amorphophallus muelleri* Blume | NIL | Leaves have astringent and analgesic properties | Islam et al., (2023) |
| *Amorphophallus hirsutus* Teijsm. & Binn. | NIL | Useful for treating liver diseases and jaundice. | Present study |
| *Amorphophallus albispathus* Hett. | Data deficient | Data deficient | Data deficient |
| *Amorphophallus atroviridis* Hett. | Data deficient | Data deficient | Data deficient |
| *Amorphophallus albus* P.Y.Liu & J.F.Chen | The corm is considered a functional food due to its richness in amino acids and trace elements necessary for the human body. | Effective in weight loss and body slimming. | Shan et al., (2023) |
| *Amorphophallus operculatus* Hett. & Sizemore | Data deficient | Data deficient | Data deficient |
| *Amorphophallus abyssinicus* (A.Rich.) N.E.Br. | The wild edible tuber can be used after treatment as a supplementary, seasonal, or survival food source in many cultural groups. | Data deficient | Tsehay et al., (2023) |
| *Amorphophallus declinatus* Hett. | Data deficient | Data deficient | Data deficient |

Medicinal properties: The medicinal properties of *Amorphophallus* species are diverse and well-documented. Some species, such as *Amorphophallus paeoniifolius*, have been used in traditional medicine for centuries to treat a range of health conditions, including digestive disorders, fever, and inflammation. The plants contain a variety of bioactive compounds, including flavonoids, phenolic acids, and terpenoids, which are responsible for their medicinal properties.

Figure 1: Flower of *Amorphophallus bulbifer*

Figure 2: Vegetative parts of *Amorphophallus paeoniifolius*

Traditional Knowledge: The use of *Amorphophallus* species in traditional medicine and as a food source is deeply rooted in the cultural practices of many communities. For example, the tubers of *Amorphophallus brevispathus* are a primary food source for some communities in rural areas. The traditional knowledge and practices surrounding these plants are an important part of the cultural heritage of these communities.

Potential applications

The potential applications of *Amorphophallus* species are vast and varied. Some possible uses include:

1. Pharmaceuticals: The bioactive compounds found in *Amorphophallus* species could be used to develop new medicines for a range of health conditions (Antony et al., 2024).

2. Food products: The edible parts of *Amorphophallus* species could be used to develop new food products, such as functional foods or nutraceuticals (Reang et al., 2023).

3. Cosmetics: The antioxidant and anti-inflammatory properties of *Amorphophallus* species could be used in cosmetic products to promote skin health and reduce inflammation (Mohanty et al., 2025).

Conservation concerns

The *Amorphophallus* genus has been classified under various categories by the IUCN. Among the 18 species discussed in this paper, *Amorphophallus declinatus* is listed as vulnerable, while *Amorphophallus albus* is categorised as endangered. *Amorphophallus muelleri* faces significant threats in the wild, and *Amorphophallus aphyllus* is considered near threatened. The IUCN status of the remaining 14 species has not been explicitly mentioned. Conserving *Amorphophallus* species is crucial to ensure their availability for future generations. The main threats to these plants are habitat loss, over-harvesting, and climate change. Implementing conservation measures, such as *ex-situ* conservation and sustainable harvesting practices, can help address these challenges.

Research directions

Further research is needed to fully understand the nutritional and medicinal properties of *Amorphophallus* species. Some potential research directions include:

1. Phytochemical analysis: Studies on the biochemical composition of *Amorphophallus* species could help to identify new bioactive compounds with potential medicinal applications (Islam et al., 2023).

2. Pharmacological studies: Studies on the pharmacological effects of *Amorphophallus* species could help to understand their potential uses in medicine (Antony et al., 2024).

3. Conservation biology: Studies on the conservation biology of *Amorphophallus* species could help to develop effective conservation strategies for these plants (Behera et al., 2014).

## Conclusion

*Amorphophallus* species present numerous opportunities for enhancing health and well-being through their nutritional and medicinal properties. With their rich content of bioactive compounds and essential nutrients, these plants have significant potential to contribute to food security and healthcare. As research continues to explore the full potential of *Amorphophallus* species, it is crucial to prioritize conservation efforts and sustainable practices to ensure the long-term availability. By utilizing both traditional knowledge and modern applications, we can discover new ways to improve human health and support sustainable development. Ultimately, the study of *Amorphophallus* species highlights the importance of preserving biodiversity and promoting the sustainable use of natural resources for the benefit of human health and well-being.

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