

Traditional Millet Recipes of Andhra Pradesh to Promote Nutrition Security

**Sangappa^{1*}, K. Chandhini², K. Monalisha³, D. Rafi⁴, G. Meghana⁵,
E. Charishma⁶ and K. Srinivasa Babu⁷**

^{1,7} Senior Scientists, ICAR-Indian Institute of Millets Research, Hyderabad, 500030

^{2,3,4,5,6} Research Scholar, ICAR-Indian Institute of Millets Research, Hyderabad, 500030

Corresponding Author

Sangappa

Email: sangappa@millets.res.in



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ABSTRACT

Millets are small-seeded grains that are witnessing a resurgence in popularity, owing to their rich nutritional profile and resilience in harsh agro-climatic conditions. They are rich in protein, fiber, essential vitamins, and minerals and offers various health benefits. Their gluten-free nature makes them suitable for individuals with celiac disease, while their low glycemic index supports blood sugar control. India stands as the largest global producer of millets, with Andhra Pradesh playing major role in preserving millet-based culinary traditions. This paper highlighted the nutritional composition and the traditional millet recipes prepared the tribal and rural households of Andhra Pradesh. Traditional dishes like sajja rotte, jonna rote, ragi sankati, jonna kudumulu, and foxtail millet uttapam, sadda garellu and millet modaks shows the continued incorporation of millets into regional diets, reflecting both cultural heritage and modern health trends.

INTRODUCTION

Millets, often referred to as Nutri-cereals, are small-seeded cereal grains that surpass major cereals

like wheat and rice in their richness of protein, fiber, vitamins, and essential minerals. They are particularly valuable for being gluten-free



and possessing a low glycemic index (Ramakrishna *et al.*, 2022). Millets are broadly split into major millets—namely Sorghum (Jowar), Pearl millet (Bajra), and Finger millet (Ragi)—and minor millets, which include Foxtail millet, Barnyard millet, Kodo millet, Proso millet, Browntop millet, and little millet. These grains exhibit high adaptability, allowing them to flourish in tropical and subtropical climates with minimal resource needs, making them ideal for dryland agriculture and hilly terrains. India is a global leader in millet production, contributing approximately 40% of the world's total output. Within India, Rajasthan stands out as the top producer, accounting for about 28.61% of the country's total millet production. Following Rajasthan, the states of Karnataka, Maharashtra, Uttar Pradesh, Haryana, Gujarat, Madhya Pradesh, Tamil Nadu, Andhra Pradesh, and Uttarakhand collectively contribute about 98% of India's millet production (2020–2021). Pearl millet, sorghum, and finger millet constitute the largest share of the nation's total millet output. Andhra Pradesh is a culturally rich state known for its unique traditional millet recipes and beverages, where millets were historically a staple in dryland areas. Crops like foxtail millet, finger millet, pearl millet, and little millet were widely grown and consumed by various communities. Historically, millets were part of both daily meals and special preparations for festivals and religious events. Traditional Andhra Pradesh millet dishes, such as ragi sankati (a nutritious ball of finger millet flour and rice, often served with a spicy tamarind curry (pulusu) or country chicken), korra annam (cooked foxtail millet rice, popular for blood sugar management), sajja rotte, jonna rotte, and ragi dosa, are notable wholesome recipes (Bhardwaj *et al.*, 2023). Sweet dishes like Jonna kudumulu, Ragi laddu, and Samalu payasam further exemplify

the traditional nutritional wisdom and past food practices of the region (Hema *et al.*, 2022). This study aims to systematically document these traditional millet recipes commonly prepared by the local ethnic communities of Andhra Pradesh.

Nutritional composition of millets:

Table-1 highlights the nutritional composition of major cereals and millets, emphasizing their potential as nutrient-dense alternatives to staple grains like rice and wheat. Millets generally contain higher protein than rice, with foxtail millet (12.3%) and Proso millet (11.5%) being particularly rich, while their fat content is also higher, as seen in pearl millet (5.43%) and foxtail millet (4.3%), contributing to energy density. In contrast to rice, which is high in carbohydrates (78.2%), millets have moderate carbohydrate levels (60–67%) and are rich in dietary fiber, with Barnyard millet (12.6%), Pearl millet (11.5%), and Finger millet (11.2%) providing significant digestive benefits. Millets are also excellent sources of essential minerals and micronutrients. Finger millet stands out with exceptionally high iron (364 mg) and calcium (364 mg) content, while pearl millet and other varieties contribute moderate amounts of iron and calcium, supporting bone health and combating anemia. Additionally, millets provide essential B-vitamins, including thiamine, riboflavin, niacin, and folic acid, with Proso and Barnyard millet being particularly rich in niacin (Kumar *et al.*, 2025). Overall, compared to rice and wheat, millets offer a superior nutritional profile, combining higher protein, dietary fiber, minerals, and vitamins, making them highly suitable for healthier diets, dietary diversification, and sustainable food systems.

Table 1. Nutritional composition of millets

Food grains	Protein (%)	Fat (%)	Carbohydrate (%)	Dietary Fiber (TDF)	Iron (mg)	Ca (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Folic acid (ug)
Rice	7.8	0.52	78.2	2.8	0.65	7.5	0.05	0.05	1.7	9.32
Wheat	10.6	1.47	64.7	11.2	3.97	39.4	0.46	0.15	2.7	30.1
Sorghum	10.0	1.73	67.7	10.2	3.95	27.6	0.35	0.14	2.1	39.4
Pearl millet	11.0	5.43	61.8	11.5	6.42	27.4	0.25	0.2	0.9	36.1
Finger millet	7.2	1.92	66.8	11.2	4.62	364	0.37	0.17	1.3	34.7
Foxtail millet	12.3	4.3	60.1	*10.7	2.8	31.0	0.59	0.11	3.2	15
Little millet	10.1	3.89	65.5	7.7	1.2	16.1	0.26	0.05	1.3	36.2
Barnyard millet	6.2	2.2	65.5	**12.6	5.0	20.0	0.33	0.1	4.2	-
Proso millet	11.5	3.5	64.5	9.6	2.0	30.0	0.41	0.28	4.5	-
Kodo millet	8.9	2.55	66.2	6.4	2.34	15.3	0.29	0.2	1.5	39.5

Source: Indian Food Composition Tables-NIN, 2017; Nutritive Value of Indian Foods-NIN, 2007

Traditional Millet Recipes from Andhra Pradesh

Millets, once central to the Andhra kitchen are now being rediscovered due to their high **nutritional value** and **climate resilience** (Salomeyesudas and Satheesh 2009). Some of the more popular/traditional millet-based dishes (or millet variants of existing dishes) from Andhra Pradesh are mentioned below in Table 2.

Table 2: Traditional Millet recipes

S.No	Name of the food recipe	Ingredients	Preparation Procedure	Nutritional Benefits
1	Jonna Rotte (Sorghum / Jowar Roti)	1 cup jowar (sorghum) flour - Hot water (as needed) - Salt to taste	- Mix jowar flour and salt. Add hot water gradually to form soft dough. - Rest 10 mins. Shape balls and flatten gently by hand. - Cook on hot tawa until brown spots appear. - Serve hot with chutney, curry or jaggery.	- High in dietary fibre, supports digestion - Rich in iron, B-vitamins, combats anaemia - Low glycemic index, helps manage blood sugar
2	Sajja Rotte (Pearl Millet Roti)	1 cup sajja (bajra/pearl millet) flour - Warm water, salt - Optional: Chopped onion, green chilli, coriander	- Knead flour with warm water and salt and make into soft dough. - Shape roti by hand or with a rolling pin. - Cook on tawa until golden colour appears.	- Excellent source of protein and fibre - High magnesium, good for heart health - Contains antioxidants for immunity
3	Jonna Kudumulu	1 cup jowar flour - Water - Optional: Grated coconut + jaggery for filling	- Boil water, add flour, stir quickly to form dough. - Shape into small dumplings. - Steam for 10–15 minutes. - Serve with ghee or chutney.	- Steamed, low oil, low fat - High calcium, strengthens bones - Easy to digest, suitable for all ages



4	Sadda Garallu (Sweet Pearl Millet Pancakes)	1 cup pearl millet flour 1/2 cup jaggery (melted) - Cardamom, grated coconut, sesame (optional)	- Mix all ingredients to form a thick batter. - Pour into small rounds on a greased pan. - Cook on both sides till golden brown	- Energy-rich snack - Natural sweeteners (better than refined sugar) - Good for children and elders alike
5	Foxtail Millet Uttapam	1 cup foxtail millet 1/2 cup urad dal 1/4 cup poha - Chopped onions, green chilli, curry leaves	- Soak millet, dal, and poha. Grind and ferment overnight. - Pour batter on tawa, top with veggies. - Cook both sides till crisp and soft.	- High protein + fibre combo - Fermented batter (improves gut health) - Low glycemic load (diabetic friendly)
6	Mixed Millet Soup (Chiru Dhanyalu Java)	1 tbsp each of ragi, korra, sajja, arikalu 2 cups water - Garlic, jeera, pepper, salt	- Roast and grind the millets. - Boil with water, add ginger, garlic, salt, and mild spices (e.g. cumin, pepper). - Cook till grains soften and the soup attains the desired consistency. - Serve warm. - Garnish with coriander, maybe a tempering of cumin or crushed chillies in ghee/oil.	- Multigrain = diverse micronutrients - Light and hydrating - Great for recovery diets
7	Dibba Rotti (Ragi/ Kodo millet)	1 cup Ragi/ Kodomillet 1/2 cup urad dal 1/4 cup poha - salt, jeera, - Chopped green chillies, curry leaves, grated ginger, onion, coriander.	- Soak millet (e.g. kodo), urad dal, and beaten rice (poha/aval) separately (say for 1–2 hours). - Grind them separately: dal into fluffy paste; millet into fine rava-like paste; poha ground fine. - Combine, season with salt, jeera, chopped green chillies, curry leaves, grated ginger, onion, coriander. - Ferment overnight (if desired) or use fresh batter. - Heat the curved pan. Pour the batter, cover with lid, cook on low flame till base becomes crisp/curdy, then flip to cook the other side. - Serve with chutney or sambar.	Packed with calcium, iron, and dietary fibre, making it an ideal ingredient for those seeking to maintain a balanced diet.
8	Ragi Sesame Modak (Sweet Dumplings)	1 cup ragi flour 1/2 cup grated coconut 1/4 cup jaggery 2 tbsp sesame seeds - Ghee	- Roast ragi flour and sesame. - Prepare filling/stuffing using grated coconut, jaggery, roasted sesame seeds. - Make dough, stuff, shape into modaks. - Steam and serve with ghee.	- Ragi (high calcium and iron) - Sesame (rich in good fats and zinc) - Natural sweeteners promote energy

Exploring Traditional Millet Recipes: Nutrition and Heritage on a Plate

Millets have long been a fundamental component of traditional Indian cuisine, appreciated for their adaptability and superior nutritional content (Reddy and Patel 2023). One such cornerstone is Jonna Rotte (Sorghum/Jowar Roti), a simple yet hearty flatbread prepared by mixing jowar flour, a pinch of salt, and hot water into a soft dough. After a brief rest, the dough is flattened by hand and cooked on a hot tawa until characteristic brown spots appear. This roti is exceptionally high in dietary fiber, promoting good digestion, and is rich in iron and B-vitamins, which help prevent anemia. Its low glycemic index also makes it beneficial for managing blood sugar. Similarly, Sajja Rotte (Pearl Millet Roti) offers a protein- and fiber-rich substitute for refined grain bread, supporting muscle health and digestion. Prepared by kneading pearl millet flour with warm water and salt, it can be enhanced with finely chopped onions, green chilies, and coriander before being cooked on a tawa until golden brown. Sajja Rotte is highly nutritious, packed with magnesium, which is vital for heart health and boosting immunity, making it a filling option for everyday meals. Jonna Kudumulu is a steamed dumpling where jowar flour is combined with boiling water to form a soft dough, shaped into small dumplings, and steamed for 10–15 minutes. Optional additions like grated coconut and jaggery can enhance the flavor. Being rich in calcium and easily digestible, this dish supports bone health and is an excellent snack for both children and the elderly. Sadda Garellu is a sweet snack created by mixing pearl millet flour with melted jaggery to form a thick, sweet batter, which is then poured onto a hot pan and cooked until golden brown. Cardamom, coconut, or sesame seeds can be added for extra aroma and taste. For a savory fermented option, Foxtail Millet Uttapam is prepared by soaking and grinding

foxtail millet, urad dal, and poha into a smooth batter, which is then fermented overnight. The batter is poured onto a hot tawa, topped with onions, green chilies, and curry leaves, and cooked until crispy. Another light, nourishing meal is Mixed Millet Soup/Chiru Dhanyalu Java, made from roasted and ground millets (like ragi, foxtail, pearl, and kodo) mixed into boiling water. Spices such as garlic, ginger, cumin, and pepper are added, and the mixture is simmered until smooth and slightly thickened. Dibba Rotti is a popular, thick pancake prepared by soaking and grinding ragi or kodo millet, urad dal, and poha separately. The seasoned batter, which includes spices, ginger, onion, and coriander, is cooked in a pan on both sides until crispy. Finally, Ragi Sesame Modak is a sweet, steamed dumpling crafted from ragi flour, grated coconut, jaggery, and roasted sesame seeds, often served with ghee. These traditional millet-based recipes brilliantly merge flavor, cultural legacy, and exceptional nutritional value, demonstrating that integrating such dishes into daily diets can significantly promote better health and disease prevention.



Fig 1: Ragi Dibba Rotte



Fig 2: Ragi sesame modak



Fig 3. Foxtail millet Utappam



Fig 4. Sadda Garallu



Fig 5. Jowar Kudumulu



Fig 7. Dibba Rotti



Fig 8. Jonna Rotte

CONCLUSION:

Millets represents a powerful pack house of nutrition, tradition and ecological sustainability. Millets once isolated in favour of cereals like rice and wheat, they are now recognized for their high nutritional profile and health-promoting properties. From preventing diabetes and cardiovascular (heart) disorders to promoting digestive health and supporting gluten-free diets. Highly adaptability nature of millets to arid climates shows their potentiality in addressing the nutritional security and sustainability. Traditional millet recipes of Andhra Pradesh continue to preserve the culinary wisdom of past generations. Bringing back the millet consumption not only enhances the health but also supports farming systems of Andhra Pradesh. With growing and demand and awareness in the public, millets are shifting from ancient grains to future super foods representing both nutritional security and ecological resilience.

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