

# Vegetable Pigeonpea - a High Protein Food for all Ages



## Information Bulletin No. 83

(Part I - The science behind the scenes)

Part II - Vegetable pigeonpea  
recipes

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# Vegetable Pigeonpea - a High Protein Food for all Ages

*(Part I - The science behind the scenes)*

*Part II - Vegetable pigeonpea recipes*

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**International Crops Research Institute  
for the Semi-Arid Tropics**

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## Introduction

Most of the food proteins for vegetarians in the semi-arid tropics are derived from legumes that are generally grown under low input and risk-prone marginal environments with repeatedly low and unstable yields. At present, the protein availability in such areas is less than one-third of its normal requirement and with the continuously growing population and stagnation of yield, the protein availability to the masses is likely to decline further. Since the food production balance in most countries will always remain in favor of cereals, the issue of protein availability assumes a greater significance from the point of view of nutrition for the poor. This publication in two books (Part I – The science behind the scenes; Part II – Vegetable pigeonpea recipes) covers both scientific and nutritional aspects of the crop and provides recipes for tasty pigeonpea dishes.

Among legumes, pigeonpea [*Cajanus cajan* (L.) Millsp.] occupies an important place in rainfed agriculture. Globally, it is cultivated on 4.92 m ha, and 3.58 m ha (72.7%) of it is confined to India alone. The crop is known to be grown in 22 countries but it is cultivated in large areas only in a few countries (Table 1). In Asia, Myanmar (560,000 ha), China (150,000 ha) and Nepal (20,000 ha) are the other major pigeonpea growing countries besides India. In the African continent, Kenya, Malawi, Uganda, Mozambique and Tanzania produce considerable amounts of pigeonpea. The Caribbean islands and some South American countries also have reasonable areas under pigeonpea cultivation. In India, de-hulled split cotyledons of pigeonpea are cooked as a thick spicy soup, locally called *dal*, which is eaten with bread and rice, while in southern and eastern Africa and southern America both whole dry and immature seeds are used as vegetable. Its nutritious broken seeds, husks and pod walls are fed to cattle; while its dry stems make an important household fuel wood.

**Origin:** For a long time, the origin of pigeonpea has remained unclear. A perusal of early literature on this subject indicates that the crop originated either in Africa (Zanzibar or Guinea) or India. The presence of pigeonpea seeds in historical tombs indicated that it was cultivated in Egypt around 2000 BC. The availability of high diversity among germplasm made Vavilov (1939) conclude that India is the primary center of origin of the cultivated pigeonpea. De (1974) and van der Maesen (1980) also reported that the cultivated pigeonpea originated in India and from here it was taken to Africa around 2000 BC.

**Table 1. Global area, production and yield of pigeonpea in different countries in 2007.**

<b>Country</b>	<b>Area (ha)</b>	<b>Production (t)</b>	<b>Yield (kg ha<sup>-1</sup>)</b>
Bangladesh	4,000	2,000	500
Burundi	2,000	1,800	900
China	150,000	NA	NA
Comoros	440	320	727
Congo	8,000	5,700	713
Dominican Republic	17,000*	16,065*	945*
Grenada	520*	500*	962*
Haiti	6,000*	2,400*	400*
India	3,580,000	2,740,000	765
Jamaica	1,100*	1,300*	1,182*
Kenya	196,261	110,662	5,634
Malawi	123,000	79,000	642
Mozambique	85000	NA	NA
Myanmar	560,000	530,000	946
Nepal	20,703	19,085	922
Panama	4,800*	1,949*	406*
Philippines	813	1,258	1,547
Puerto Rico	272*	218*	802*
Tanzania	68,000	50,000	735
Trinidad and Tobago	400*	953*	2,381*
Uganda	86,000	88,000	1,023
Venezuela	3,344*	3,015*	903*
<b>Total/Mean</b>	<b>4,917,653</b>	<b>3,654,225</b>	<b>743</b>

Source: FAO and other resources.

\*Vegetable pigeonpea.



**Taxonomy and distribution:** Van der Maesen (1986) reported that the first scientific name of pigeonpea was given by Bauhin and Cherler during 1650-1651 and they called it *Arbor trifolia indica* (*Thora Paerou*), which means 'common *dal*' in the Malayalam language of India. Linnaeus (1753) gave pigeonpea its first binomial nomenclature – *Cytisus cajan*. Van der Maesen (1986) has written an excellent monograph on this aspect and at present the following taxonomical classification is globally accepted.

**Order:** *Fabales*  
**Tribe:** *Phaseoleae*  
**Sub-tribe:** *Cajaninae*  
**Family:** *Leguminosae*  
**Genus:** *Cajanus*  
**Species:** *cajan*

Based on various morphological, cytological, chemical and hybridization data, van der Maesen (1986) merged genus *Atylosia*, the nearest wild relative of pigeonpea, with genus *Cajanus*. Consequently, genus *Cajanus* now has 32 species and pigeonpea (*Cajanus cajan*) is the lone cultivated species of the *Cajaninae* sub-tribe.

Pigeonpea is known with various vernacular names in different countries (Table 2) and today's most popular name 'pigeonpea' was coined by Plukenet (1692) in Barbados, where the crop was grown in barren lands for feeding pigeons. According to De (1974), *Tuvarai* or *tuvari* are the oldest vernacular names of pigeonpea as these are mentioned in "*Gathasaptasati*", which was published between 300 and 400 AD. Pigeonpea is always credited to be a crop most suitable for subsistence agriculture because it is drought tolerant, needs minimum inputs, and can produce reasonable quantities of food even under unfavorable production environments. Its seeds contain about 20-22% protein and reasonable amounts of minerals and essential amino acids.



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**Table 2: Some vernacular names of pigeonpea used in different parts of the world.**

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Country	Vernaculars
<b>ASIA:</b>	
Bangladesh	Arhar, Tur, Tuver
China	Muk tau, Tan Shue, Shan Tou Ken (Tree bean)
India	Red gram, Arhar, Tur, Kandulu, Thogari, Tuvari, Thuvurai, Thora-paerou, Paruppu
Indonesia	Saupapa, Kachng bali, Kachng gude
Japan	Ki-mame
Malaysia	Kachang, Kachang dal
Nepal	Adhad, Arhar, Rar
Philippines	Tabios, Kardis, Kudis, Callos, Kadyos
Sri Lanka	Parippu (Pulse)
<b>AFRICA:</b>	
(General)	Pigeonpea, Pois d'Angole, Pois de Congo
Angola	Ervilha do Congo
Egypt	Ads sudani, Lubia hadjeri sudani
Ethiopia	Yeweof-ater, Ringa
Gabon	Oando, Ossanga, Osang-eli
Kenya, Tanzania	Mbaazi
Mozambique	Dozi, Feijao Boer
Nigeria	Aduwa, Olele, Orele, Alev a batur
San Tome	Feijao Congo
Senegambia	Cajan des Indes
<b>AMERICA:</b>	
(General)	Guandu, Angola pea, No eye pea, Gungo pea,
Brazil	Faijao andu, Feijao guandu
Cuba	Gandul, Gadul
Jamaica	Congo pea, Christmas pea, Guango
Puerto Rico	Gandul, Gandal
Venezuela	Qunichoncho, Quinchonchillo
OCEANIA-Hawaii	Puerto Rican pea
<b>EUROPE:</b>	
France	Embravade, Pois d' Angole, Pois de Bois, Pois cajan, Pois de congo
Germany	Angolische Erbse, Indischer Bohnenstrauch,
Netherlands	Wandoe
<b>AUSTRALIA</b>	Pigeonoepa

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## Vegetable Pigeonpea Recipes

### 1. Green seed massalam curry (India)

Ingredients	Quantity
Green seeds	250 g
Tomatoes (sliced)	200 g
Onion (chopped)	50 g
Ginger	20 g
Garlic	20 g
Yogurt (curd)	100 g
Fresh coconut (copra)	20 g
Cumin seeds	5 g
Cinnamon/cardamom	3 g
Cooking oil	50 g
Turmeric powder	½ tsp
Garam masala	1 tsp
Coriander leaves	a bunch
Sodium bicarbonate	a pinch
Salt	to taste

#### Method

Wash pigeonpea seeds and boil them for about 5 min with a pinch of sodium bicarbonate. Remove excess water. Blanch tomatoes, remove their skin and seeds and chop them finely. Fry sliced onions to golden color, grind to a paste along with curd. Grind ginger and garlic and keep the contents separately. Grind coconut after extracting its milk. Fry the onion paste, copra, cumin seeds and turmeric powder over a low heat. After 5 min, add the blanched tomatoes. Keep frying until the raw smell ceases. Add coconut milk, boiled green pigeonpea seeds, salt to taste and cook for another 10 min until the gravy thickens. Sprinkle the garam masala and garnish with chopped coriander leaves.

#### Nutritive value

Constituent	Percent
Protein	23.5
Fat	9.5
Sugar	7.0
Ash	3.4
Fiber	5.4
IVPD	68.9
Energy (k.cal.100 g <sup>-1</sup> )	418.5

## 2. Green seed with paneer (India)

Ingredients	Quantity
Green pigeonpea seeds	450 g
Cottage cheese (paneer)	150 g
Garam masala	1 tsp
Tomatoes (sliced)	200 g
Coriander powder	a bunch
Chilli powder	¼ tsp
Onion (chopped)	50 g
Cooking oil	50 g
Garlic (cloves)	3
Ginger (chopped)	5 g
Cashew nuts	30 g
Yoghurt (curd)	30 g
Turmeric powder	½ tsp
Salt	to taste

### Method

Grind together onions, coriander powder, chilli powder, turmeric, ginger and garlic to a fine paste. Grind cashew nuts separately. Boil green pigeonpea seed with a little salt for 5 min and discard excess water. Blanch tomatoes in hot water, remove their skin and seeds, and keep aside after chopping. Cut paneer into small cubes. Heat oil, fry the paneer pieces for 2-3 min, and add



garam masala and chopped tomatoes. Add boiled green pigeonpea seeds and a little water, and continue cooking until the pigeonpea seeds turn soft. Add a little water if required. Simmer for about 4-5 min. Add ground cashew nuts and beaten curd, mix well and continue to simmer. When the mixture thickens, remove it from heat and sprinkle garam masala and garnish with chopped coriander leaves.

### Nutritive value

Constituent	Percent
Protein	25.8
Fat	10.5
Sugar	6.0
Ash	3.8
Fiber	8.4
IVPD	60.5
Energy (k.cal.100 g <sup>-1</sup> )	434.4

### 3. Prawns with green seeds (India)

Ingredients	Quantity
Green pigeonpea seeds	250 g
Prawns (shelled)	250 g
Yoghurt (curd)	150 g
Onion (sliced)	100 g



Coconut milk	150 ml
Ginger	20 g
Cooking oil	50 g
Tomatoes (sliced)	30 g
Garlic	10 g
Dry coconut (copra)	30 g
Poppy seed	15 g
Cinnamon	3 g
Cardamoms	3 g
Garam masala	1 tsp
Sodium bicarbonate	a pinch
Coriander leaves	a bunch
Salt	to taste

## Method

Clean green pigeonpea seeds and boil them for 5 min with a little sodium bicarbonate. Discard the excess water. Slice onions and fry them to a golden brown. Grind onion, curd, ginger, garlic, coconut and poppy seeds together. Clean prawns by removing shell and vein. Soak prawns for 1 h in the above prepared materials. Heat oil with cinnamon and cardamoms over a very low heat, fry for 2 min. Add the prawns to the garam masala. If the mixture becomes dry, add small quantities of coconut milk. Cook for 20 min, then add boiled pigeonpea, the remaining coconut milk and salt to taste. Garnish it with sliced tomatoes and chopped coriander leaves.

## Nutritive value

Constituent	Percent
Protein	36.5
Fat	12.3
Sugar	8.6
Fiber	7.5
Ash	6.9
IVPD	63.0
Energy (k.cal 100 g <sup>-1</sup> )	384

## 4. Stuffed puris (India)

Ingredients	Quantity
Green pigeonpea seeds	200 g
Lentil dal	50 g

Onions (chopped)	50 g
Green chillies	2
Cumin powder	½ tsp
Garam masala	¼ tsp
Turmeric powder	¼ tsp
Asafetida (hing)	¼ tsp
Wheat flour	450 g
Cooking oil (for deep frying)	300 g
Salt	to taste

## Method

Shell green pigeonpea pods and remove green seeds. Clean and wash lentil dal. Boil the lentil dal and squeeze out all water and mash. Boil the green seeds of pigeonpea, remove excess water, mash the boiled green seeds and mix with mashed lentil dal. Put all ingredients for filling including crushed green chillies and salt. Cook the content over a low flame until all the water has evaporated and add garam masala. Sieve the wheat flour and add some oil (15-20 g). Make it into a fairly stiff dough. Allow the dough to stand for 1 h. Divide the dough into 16 even-sized balls, roll them very thinly in a round shape. Spread the pigeonpea filling evenly on eight of them, cover the filling with the remaining eight, and then pinch the edges to enclose the filling. Heat oil in a large sauce pan and fry the puris until they become a light golden brown. Serve hot with a little tomato sauce or dry vegetable curry.

## Nutritive value

Constituent	Percent
Protein	23.0
Fat	21.7
Sugar	8.1
Ash	2.9
Fiber	5.4

## 5. Brubus (Indonesia)

Ingredients	Quantity
Green pigeonpea seeds	200 g
Coconut grits	30 g
Onion (chopped)	20 g
Garlic (cloves)	2-3

Coriander powder	½ tsp
Red chilli (powder)	½ tsp
Cooking oil	2 tsp
Salt	to taste

### Method

Clean the green seeds and boil them for 10-15 min. Fry spices, onion and garlic in cooking oil for 3-4 min. Add boiled green seeds and fry them with spices further for 2-3 min. Add coconut grits and salt to taste.

## 6. Pea paste (Africa)

Ingredients	Quantity
Green pigeonpea seeds	200 g
Onion (sliced)	30 g
Cooking oil	1 tbsp
Black pepper (powder)	1/4 tsp
Salt	to taste

### Method

Boil green pigeonpea seeds for 30-40 min or until they become soft. Mix other ingredients, make paste and cut into pieces of convenient sizes and fry them in oil. Add salt according to taste and use the dish with cereals or rice.

## 7. Chipere (Africa)

Ingredients	Quantity
Green pigeonpea seeds	100 g
Maize (dehulled)	200 g
Black pepper	½ tsp
Salt	to taste

### Method

Shell the freshly harvested green pods of pigeonpea and remove green seeds. Boil the seeds with maize in salted water for 15-20 min or until they become soft. Discard the excess water. Add black pepper powder and salt to taste and make a paste. It is eaten both as a snack food and with cooked cassava as a major dish. Chipere of green seeds is more nutritious than that made from dry seeds. Pigeonpea chiperes are considered protein-rich and high energy foods in Malawi.



## 8. Akara (Africa)

Ingredients	Quantity
Green pigeonpea seeds	200 g
Onion (chopped)	50 g
Green chillies (chopped)	2-3
Cumin seeds	100 g
Cooking oil	
Salt	to taste

### Method

Clean the green pigeonpea seeds and boil them to a desirable softness. Crush the boiled green seeds into a paste and keep it aside. Heat oil in a pan and fry onions, green chillies and cumin seeds to a brownish color and mix the ingredients with the green seed paste. Make small flattened pieces from the paste and fry them in a baking pan using small quantity of cooking oil. Serve it hot with tomato ketchup.



## Nutritive value

Constituent	Percent
Protein	21.4
Fat	24.4
Sugar	7.9
Ash	7.2
Fiber	6.8
IVPD	53.0
Energy (k.cal.100 g <sup>-1</sup> )	395.3

## 9. Empanada (Venezuela)

Ingredients	Quantity
Green pigeonpea seeds	200 g
Chicken soup	1 cup
Wheat flour (fine grade)	200 g
Butter	50 g
Onion (chopped)	20 g
Garlic (small cloves)	3-4
Tomatoes (chopped)	50 g
Red chilli (powder)	1 tsp
Coriander (powder)	1 tsp



Cumin seed (powder)	1 tsp
Cooking oil	150 g
Salt	to taste

## Method

Boil green seeds of pigeonpea in water with a little salt for 3-5 min. Heat some cooking oil in a pan and fry onions and garlic. Add tomatoes, red chilli, coriander and cumin powder and stir them well. Then add boiled green pigeonpea seeds and cook them well. Keep the cooked content separately. Prepare dough from wheat flour by mixing butter and suitable quantity of water. Roll the dough and cut into small round pieces. Add pigeonpea filling, close the ends using water and pressing it with a fork end. Deep-fry the product for serving.

## Nutritive value

Constituent	Percent
Protein	16.2
Fat	22.4
Sugar	4.6
Ash	5.7
Fiber	5.0
IVPD	64.7
Energy (k cal.100 g <sup>-1</sup> )	434.9

## 10. Green pigeonpea pulav (India)

Ingredients	Quantity
Rice	200 g
Green pigeonpea seeds	100 g
Onions (chopped)	20 g
Carrot (small pieces)	1 tsp
Coconut (grits)	50 g
Green chilli (pieces)	2-3
Cumin seeds	1 tsp
Turmeric powder	½ tsp
Cooking oil	50 g
Salt	to taste
Lemon	



## Method

Clean the rice and green seeds of pigeonpea and cook them separately. Boil carrots until they become soft. Heat oil in a pan and fry onions, cumin seeds and green chilli. Add cooked rice, green seeds, carrots and coconut grits one after another and gently mix all the ingredients. Add salt and lemon to taste and serve.

## Nutritive value

Constituent	Percent
Protein	17.5
Fat	4.6
Sugar	8.0
Ash	3.7
Fiber	5.4
IVPD	63.5
Energy (k cal 100 g <sup>-1</sup> )	380.6

## 11. Accras (West Indies)

Ingredients	Quantity
Green pigeonpea seeds	150 g
Wheat flour	70 g
Onion (chopped)	30 g
Baking powder	a pinch
Vinegar	1 tsp

Coriander (powder)	1 tsp
Pepper	½ tsp
Cooking oil	200 g
Salt and pepper	to taste

## Method

Boil green pigeonpea seeds slowly in two cups of water. Drain the excess water if necessary. Crush the seeds with a rolling pin on a board. Put crushed peas into a bowl. Add other ingredients and mix well into a thick paste. Fry the mixture 3 or 4 spoonful at a time, turn over to brown on both sides. Drain on absorbent paper. Garnish as desired and serve hot.

## Nutritive value

Constituent	Percent
Protein	17.5
Fat	18.3
Sugar	5.0
Ash	4.4
Fiber	6.2
IVPD	55.7
Energy (k cal 100 g <sup>-1</sup> )	380.4



## 12. Logs (West Indies)

Ingredients	Quantity
Green pigeonpea seeds	150 g
Wheat flour	100 g
Bread crumbs	½ cup
Onion (minced)	50 g
Lime juice	1 tsp
Egg	1
Coriander powder	1 tsp
Cooking oil	200 g
Salt and pepper	to taste

### Method

Boil green seeds in two cups of water until all the water evaporates. Grind peas with rolling pin. Fry minced onion in the oil, and add pigeonpea along with unbeaten egg, salt, lime juice, and ½ cup bread crumbs. Mix them well.

Prepare wheat flour paste in the ratio of 1 flour:3 water and keep it aside. Divide the mixed ingredients into six portions and shape into logs of about 4 inches long. Dip each one into flour paste and fry in oil, 1 or 2 at a time. Keep rolling continually to maintain the shape. Drain on absorbent paper, arrange on dish, garnish with celery or parsley. For a main dish, serve it with cheese or other sauce.

## 13. Pigeonpea cutlets (West Indies)

Ingredients	Quantity
Green pigeonpea seeds	150 g
Wheat flour	100 g
Bread crumbs	100 g
Lime juice	1 tbsp
Coriander powder	1 tsp
Egg	1
Onion (minced)	30 g
Cooking oil	200 g
Salt and pepper	to taste

### Method

Boil green pigeonpea seeds in water to a desirable softness. Grind the boiled green seeds with rolling pin and keep it aside. Fry minced onion in the oil and add other ingredients. Mix them well. Prepare a batter of wheat flour in the ratio of 1 flour:3 water. Divide the mixed ingredients into several portions and press

them into cutlets of half-inch thickness. Dip them in batter and deep-fry them in cooking oil until they change to a light brown color. Remove them from the cooking oil and drain them on absorbent paper. Serve the dish with tomato or cheese sauce, or brown gravy.

#### 14. Fresh roasted pigeonpeas (West Indies)

Ingredients	Quantity
Fresh green pigeonpea seeds	500 g
Salt	to taste

##### Method

Clean the peas, remove all foreign matter. Put a frying pan on the fire. Put the peas on the pan and roast them. When brown, add salt and a little water. Continue roasting until dry. Serve hot.

#### 15. Pigeonpea Loaf (West Indies)

Ingredients	Quantity
Green pigeonpea seeds	1 & 3/4 cup
Salt	to taste
Oil	1 oz
Lime juice	1 tsp
Eggs	2
Large onion (minced)	1
Bread crumbs	1/2 cup
Minced celery or coriander	1 tsp
Pepper	if desired

##### Method

Prepare the mixture following the method for pigeonpea logs. Put the mixture into a greased loaf-tin. Sprinkle with crumbs. Bake at 350° F for 20 min. Turn out onto a flat dish. Garnish as desired.

#### 16. Pigeonpea Surprise Loaf (West Indies)

Ingredients	Quantity
Same as for pigeonpea loaf but have ready:	
Hard boiled egg	4





## Method

Follow the same recipe as for the pigeonpea loaf but put only 1/2 the mixture into a loaf-tin. Add 4 hard-boiled, shelled eggs, end to end over the mixture. Add the rest of the mixture. Smooth with brush and oil. Bake at 350° F for 20 minutes. Turn out onto a flat dish and garnish.

## 17. Edeke apena (Africa)

Ingredients	Quantity
Green seeds	200 g
Finger millet	200 g
Salt	to taste

## Method

Clean green pigeonpea seeds and boil them to desirable softness. Discard any leftover water. Cook finger millet accordingly and mix with boiled green seeds of pigeonpea. Add salt and serve the dish as a major food item.

## Nutritive value

Constituent	Percent
Protein	15.8
Fat	2.6
Sugar	3.8
Ash	2.6
Fiber	6.4
IVPD	59.4
Energy (k.cal.100 g <sup>-1</sup> )	340.5

## 18. Boiled tender pigeonpea pods

### Method

Select green pigeonpea pods with fully developed but immature seeds. Clean and wash the pods, add water and salt to taste. Boil for 10-15 minutes. The boiled seeds can be eaten directly or with scraped coconut.

## Pigeonpea Dal Recipes

### 1. Dal curry (India)

Ingredients	Quantity
Pigeonpea dal	150 g
Onion (chopped)	20 g
Tomatoes (medium size)	3
Garlic (cloves)	3
Turmeric powder	½ tsp
Cooking oil	10 g
Salt and chillies	to taste



## Method

Boil the dal to complete softness or pressure cook it in the required quantity of water. Fry chopped onions, garlic pieces, turmeric powder, green chillies and sliced tomatoes. Add cooked dal, salt and water (if required) to the fried ingredients. Further, cook the whole content for 2-3 minutes or to a desired consistency.

## Nutritive value

Constituents	Percent
Protein	22.0
Fat	11.3
Sugar	6.8
Ash	4.0
Fiber	5.6
IVPD	66.1
Energy (k.cal.100 g <sup>-1</sup> )	347.8

## 2. Sambar (India)

Ingredients	Quantity
Pigeonpea dal	200 g
Carrot	50 g
Beans (green pods)	50 g
Onion (chopped)	2
Tamarind	10 g
Sambar powder	2 g
Mustard seeds	½ tsp
Cumin seeds	½ tsp
Green chillies (grated)	4-5
Red chilly powder	½ tsp
Cooking oil	20 g
Salt	to taste

## Method

This thin soup type preparation is made from cooked pigeonpea dal. The dal is cooked along with small pieces of carrot, beans and peeled potatoes in a pressure cooker. Fry onion, mustard seeds, cumin seeds, green chillies and red chilly powder in oil for 4-5 minutes. Add sambar powder, tamarind water cooked dal, vegetables and salt according to taste. Additional amount of water may be added to achieve the desired consistency.

## Nutritive value

Constituent	Percent
Protein	20.1
Fat	8.3
Sugar	5.0
Ash	7.6
Fiber	8.0
IVPD	64.5
Energy (k.cal.100 g <sup>-1</sup> )	405.9

## 3. Cabbage dal (India)

Ingredients	Quantity
Pigeonpea dal	150 g
Cabbage (fresh)	200 g
Coconut (grits)	3 tsp
Methi (fenugreek) seeds (dry)	¼ tsp
Red chillies (fried)	4-5 pieces
Dried mango powder	1 gz
Turmeric powder	1 g
Onion (chopped)	20 g
Oil	2 tbsp
Salt	to taste

## Method

Clean and chop the cabbage into small pieces. Soak the dal for 30 min in about 100 ml water. Pressure cook the dal and cabbage in separate containers within the pressure cooker. After cooking, mash the dal and add to it the cooked cabbage. Add water and salt as desired, and boil for 2-3 minutes on a low fire. Heat oil in a sauce pan and fry the chopped onions and fenugreek seeds in a little oil until golden brown. Then grind the fried materials along with coconut, red chillies, turmeric powder and mango powder. Add this mixture to the dal and boil it for 5 minutes. Season it with salt and serve.

## Nutritive Value

Constituents	Percent
Protein	19.6
Fat	11.5
Sugar	9.8
Ash	3.7
Fiber	8.9
IVPD	3.2
Energy (k.cal.100 g <sup>-1</sup> )	386.5



#### 4. Dal chutney (India)

Ingredients	Quantity
Pigeonpea dal	30 g
Chickpea dal	5 g
Black gram dal	10 g
Hing (asafetida)	½ tsp
Red chillies	2 nos
Green chillies	2 nos
Ginger	1 small piece
Dried mango powder	1 g
Mustard seed	1 g
Cooking oil	2 tsp
Salt	to taste

#### Method

Fry all the three dals in a small quantity of oil till their color changes. Then fry chillies and mustard seeds. Grind together the fried dal along with the remaining

ingredients into a paste by adding a little water. Add salt to taste. This chutney is served with main food.

### Nutritive value

Constituent	Percent
Protein	21.9
Fat	12.9
Sugar	6.0
Ash	5.0
IVPD	52.9
Energy (k.cal.100 g <sup>-1</sup> )	389.5

## 5. Vada (India)

Ingredients	Quantity
Pigeonpea dal	250 g
Green chillies (chopped)	5 g
Onions (sliced)	100 g
Ginger	20 g
Cooking oil	200 g
Curry leaves	a bunch
Salt	to taste

### Method

Soak the dal in water for two hours, drain the excess water and wash the dal. Add salt and grind lightly to break the dal into coarse pieces without adding water. Mix the broken dal pieces with chopped onion, curry leaves, and ginger. Form the mixture into flat circular shape of various thickness and sizes as desired and deep fry them in oil.

### Nutritive value

Constituent	Percent
Protein	19.0
Fat	19.6
Sugar	5.6
Ash	2.9
Fiber	3.1
IVPD	50.6
Energy (k.cal.100 g <sup>-1</sup> )	427.5

## 6. Dali Saar (India)

Ingredients	Quantity
Pigeonpea dal	100 g
Red chillies (small)	3-4 pieces
Garlic cloves (crushed)	14-15 cloves
Cooking oil	2 tsp
Salt	to taste

### Method

Pressure cook the dal in 100 ml of water for 10 minutes. Mash the boiled dal. Fry garlic cloves and red chillies and add the mashed dal and water. It is eaten with rice.

## 7. Parsi roti (India)

Ingredients	Quantity
Wheat flour	200 g
Pigeonpea dal	100 g
Jaggery	100 g
Cooking oil	5 tsp
Cardamom seeds	2

### Method

Boil pigeonpea dal to softness, remove the excess water. Mix the dal with jaggery and add cardamom seeds. Prepare a consistent dough of wheat flour and roll it into two thick round chapatis each having about 15 cm diameter. Place a thick layer of dal-jaggery mix over one chapati and cover this with the second one. Join the peripheral sides of these chapatis and roll them gently into a thick one. Cook the product in oil in a frying pan.

### Nutritive value

Constituent	Percent
Protein	10.5
Fat	5.6
Sugar	16.5
Ash	2.9
Fiber	4.5
IVPD	82.1
Energy (k.cal.100 g <sup>-1</sup> )	384.5



## 8. Dal curry (Nepal)

Ingredients	Quantity
Pigeonpea dal	250 g
Tomatoes (chopped)	20 g
Onion (chopped)	20 g
Ginger	10 g
Garlic (cloves)	2-3
Cumin seeds	2 g
Cooking oil	20 g
Turmeric powder	1 tsp
Red pepper	1 tsp
Coriander leaves	a bunch
Salt	to taste

### Method

Boil the dal in appropriate quantity of water until it becomes soft. Do not discard the cooking water. Mix the content thoroughly. Heat oil in a sauce pan and fry chopped onions, ginger, garlic, cumin seeds, red pepper and turmeric powder. Keep frying, add boiled dal and chopped tomatoes. Cook it for another 5-6 min or until the gravy thickens and garnish it with chopped coriander leaves.



## 9. Quaty (Nepal)

Ingredients	Quantity
Pigeonpea	50 g
Chickpea	100 g
Mung bean	50 g
Urd bean	50 g
Soybean	50 g
Garam masala	10 g
Cooking oil	3 tbsp
Onion (chopped)	20 g
Salt	to taste

### Method

Clean the seeds of legumes and soak them at room temperature overnight. Discard the soaked water and allow them to germinate for a day or so. Fry the chopped onion in cooking oil and add germinated legumes. Mix them thoroughly, sprinkle spices and add salt according to taste. This product is very nutritious as it contains several legumes rich in protein content, particularly soybean.

## 10. Tempeh (Indonesia)

Ingredients	Quantity
Pigeonpea dal	300 g
Tempeh culture powder ( <i>Rhizopus oligosporus</i> )	0.5 g
Cooking oil	150 g

### Method

Boil the dal in water until it become soft. Discard the excess water. Mix the culture powder thoroughly with the tenderized dal. Prepare a thick paste and wrap it in perforat plastic sheet. Perforation is required for better aeration. Incubate the content at 30°C for 24 hours. Fermentation will occur as fungus grows on boiled dal. The incubation period for desirable fermentation will depend on the condition of fungus culture. After fermentation, remove the plastic cover and make small pieces of fermented product. Heat oil in a sauce pan and deep fry the product for 2 to 3 min. Sprinkle salt to taste and serve it. In case of tempeh of whole pigeonpea seed, the seed coat must be completely removed from the cotyledons. For this, soak whole seed in water overnight and boil the soaked seeds for 15-20 min. Remove the seed coat manually and proceed further as above.

### Nutritive value

Constituent	Percent
Protein	28.7
Fat	25.4
Sugar	8.4
Ash	3.5
Fiber	3.0
IVPD	59.6
Energy (k.cal.100 g <sup>-1</sup> )	329.6

## 11. Rice-pigeonpea cookies (Indonesia)

Ingredients	Quantity
Pigeonpea dal flour	100 g
Rice flour	100 g
Ghee/butter	5 g
Sugar	20 g

### Method

Mix pigeonpea dal flour, rice flour, sugar and butter into a dough. Knead the dough into a flat layer, mold, and bake it in an oven.

### Nutritive value

Constituent	Percent
Protein	14.5
Fat	3.4
Sugar	15.8
Ash	4.2
Fiber	2.8
IVPD	68.5
Energy (k.cal.100 g <sup>-1</sup> )	389.5

## 12. Noodle (Thailand)

### Method

#### Isolation of starch

Pigeonpea starch can be isolated from pigeonpea whole seed or dal. Soak whole seed or dal in water overnight, wash, and grind in a waring blender at low speed for 2 min. Filter the slurry through a muslin cloth (about 60 mesh sieve size). Allow the filtrate to sediment for its starch content for about 4-6 h. Recover the starch, dry it in a hot air oven at 50°C and use it for noodle preparation.

<b>Ingredients</b>	<b>Quantity</b>
Dry starch	100 g
Egg (medium size)	2
Beans	30 g
Carrot (chopped)	30 g
Cabbage (chopped)	30 g
Onion (chopped)	30 g
Garlic (cloves)	3-4
Green chillies (chopped)	2-3
Cooking oil	40 g
Coriander leaves	a bunch
Salt	to taste

### **Method**

Boil the dry starch and water in the ratio of 1:7 for 5 min. Extrude the starch gel thus formed into cold water by using a locally designed extruder with a hole opening of about 2 mm diameter. Heat oil in a sauce pan and fry onions, garlic, chillies, carrot, beans and cabbage. Add wet noodle and beaten eggs. Heat the content on low flame for 4-5 min. Garnish the product with coriander leaves and add salt to taste.

### **Nutritive value**

<b>Constituent</b>	<b>Percent</b>
Protein	16.6
Fat	13.2
Sugar	58.9
Ash	5.6
Fiber	4.5
IVPD	66.7
Energy (k.cal.100 g <sup>-1</sup> )	345.6

## **13. Rice-pigeonpea grits (Thailand)**

<b>Ingredients</b>	<b>Quantity</b>
Rice	200 g
Pigeonpea grits	100 g
Salt	to taste

### **Method**

Prepare pigeonpea grits using a mini-dehuller or flour grinding mill. Grits are the partially dehulled and broken pieces of cotyledons. Boil the grits for 15-20 min and add rice. Continue boiling until the grits and rice are cooked to a desirable softness. Sprinkle salt and serve the dish.

## Nutritive value

Constituent	Percent
Protein	12.3
Fat	2.6
Sugar	5.0
Ash	3.5
Fiber	4.2
IVPD	65.8
Energy (k.cal.100 g <sup>-1</sup> )	360.4

## 14. Pe sin ngun curry (Myanmar)

Ingredients	Quantity
Pigeonpea	100 g
Potato (medium size)	3
Brinjal (medium size)	3
Ladies finger (small)	5
Tomato	2
Cooking oil	1 tbsp
Ginger	1 g



Garlic	1 g
Onion	1 g
Chilli powder	1 g
Curry leaves	a bunch
Salt	to taste

### Method

Wash and boil pigeonpea with approximately five cups of water until peas are well cooked. Cut vegetables into 4 cm size bits, wash and dry. Pound all condiments, garlic, ginger, onion together. Put cooking oil into a pot, and place on stove. Put curry leaves into heated oil, add pounded condiments into boiled peas. Add salt and masala to taste. Serve hot.

## 15. Devilled dal curry (Sri Lanka)

Ingredients	Quantity
Pigeonpea dal	125 g
Chilli powder	1 tsp
Chopped dried chilli	½ tsp
Maldives fish (powder)	1 tsp
Sliced onions	2 tsp
Curry leaves	a bunch (small)
Mustard seeds	½ tsp
Turmeric powder	a pinch
Cooking oil	1 tsp
Salt	to taste

### Method

Clean dal and add sufficient water (about 2 ½ cups), chilli powder and turmeric powder. Boil the contents in a container until dal becomes tender. Temper with curry leaves, onions, mustard and Maldives fish. Add salt to taste and serve hot with rice.

## 16. Steamed pigeonpea curry (Sri Lanka)

Ingredients	Quantity
Pigeonpea dal	125 g
Chilli powder	1 tsp
Curry powder	1 tsp
Turmeric powder	a pinch
Salt	to taste

## Method

Clean dal and soak it in water for 4-5 hours. Discard excess water and grind the soaked dal in a mincer or using a chilli grinding stone to a fairly smooth paste. Add chilli powder, curry powder, turmeric and salt to the paste and mix it well. Flatten this dough on a banana leaf and steam it for about 15 minutes. Cut the steamed dough into pieces and cook as a meat curry. Serve it hot with rice.

## 17. Dal mallum (Sri Lanka)

Ingredients	Quantity
Pigeonpea dal	125 g
Water	2 ¼
Sliced onions	1 tsp
Green chillies	2
Curry leaves	a small sprig
Pounded Maldive dried fish	1 dessert spoon
Coconut	2-3 tsp
Turmeric	a pinch
Salt	to taste

## Method

Wash dal well, add water with onions, curry leaves, turmeric and Maldive dried fish. Boil until tender. Grind green chillies and grated coconut together, and mix well with the boiled dal. Add salt and allow to simmer for 4-5 minutes. Serve with rice.

## 18. Fried pigeonpea dal (Sri Lanka)

Ingredients	Quantity
Pigeonpea dal	1 cup
Chilli powder	½ teaspoon
Oil	enough for frying
Salt	to taste

## Method

Soak dal in water for 2-3 h. Wash the soaked dal several times with water. Add water and boil dal for 5 minutes. Drain the water, and allow it to dry. Heat oil and deep fry the soaked dal until it is light golden brown. Remove excess oil and spread the fried dal on a paper or on muslin cloth. Sprinkle salt and chilli powder to taste, and mix well to serve.



## 19. Pigeonpea cocktail mixture (Sri Lanka)

Ingredients	Quantity
Fried pigeonpea	1 cup
Rice flakes	½ cup
Wheat flour	½ cup
Chilli powder	½ teaspoon
Curry leaves	2-3 sprigs
Dried chillies	5-6
Desiccated coconut powder	¼ cup
Turmeric	a pinch
Oil	for frying
Salt	to taste

### Method

Roast wheat flour to light golden color. Sift the flour, add turmeric, chilli powder and salt. Knead to a soft dough with boiled water. Put the dough in the string hopper mould, extrude it in to hot oil, and remove when light golden brown (murukku). Fry curry leaves, dried chillies, and rice flakes; drain excess oil. Roast desiccated coconut, mix with fried chillies, rice flakes, and curry leaves. Add fried pigeonpea and murukku, sprinkle salt and chilli powder, and mix well and serve.

## 20. String hoppers (Sri Lanka)

Ingredients	Quantity
Pigeonpea flour	1/3 cup
Wheat flour	2/3 cup
Salt	to taste

### Method

Mix wheat flour with pigeonpea flour and sift the mixture. Steam it and add salt and enough boiling water to make a very soft dough. Fill a string hopper mould with dough and squeeze on lightly grease string hopper mats or watties. Steam for 5 minutes. Serve hot with fish or meat curry.

## 21. Muruku (Sri Lanka)

Ingredients	Quantity
Pigeonpea flour	½ cup
Wheat flour	¾ cup
Onions	2 tablespoons



Curry leaves	a spring
Chilli powder	2 teaspoons
Turmeric powder	½ teaspoon
Salt	to taste
Oil	enough for deep frying

### Method

Roast wheat flour to light golden color. Sift it and mix well with pigeonpea flour. Grind onions and curry leaves to a fine paste. Add this paste to the flour mixture with turmeric, chilli powder and salt. Knead it to a soft dough with boiled water. Put the dough in the string hopper mould, extrude the dough into the boiling oil, and remove it when golden brown.

## 22. Pigeonpea-rice Aluwa (Sri Lanka)

Ingredients	Quantity
Roasted pigeonpea flour	½ cup
Roasted rice flour	1 cup
Sugar	1 cup
Water	½ cup
Chopped cashew nuts	2 tsp
Vanilla extract	½ teaspoon



## Method

Make syrup with sugar and water. Boil the syrup until it becomes thick. Remove it from fire and add the remaining ingredients. Mix well, and flatten on a greased tray. Cut it into pieces while still warm. Serve as a dessert.

## 23. Pittu (Sri Lanka)

Ingredients	Quantity
Pigeonpea flour	½ cup
Wheat flour	½ cup
Grated fresh coconut	½ cup
Salt	to taste

## Method

Mix wheat and pigeonpea flours together. Add grated fresh coconut and salt, and mix thoroughly with finger tips. Fill the ingredients loosely in a pittu bamboo/ mould. Steam it for 15 minutes. Remove the steamed pittu from the mould. Cut into pieces, and serve hot with fish, meat, or any vegetable curry.

## 24. Roti (Sri Lanka)

### Ingredients

Pigeonpea flour  
Wheat flour  
Grated fresh coconut  
Salt

### Quantity

½ cup  
½ cup  
1 cup  
to taste

### Method

Mix wheat and pigeonpea flours. Add coconut and salt, and knead to a soft dough with sufficient water. Divide into several parts, and flatten each part on a flat surface. Cook on hot pan. Serve hot with fish, meat, or any vegetable curry.



## 25. Pigeonpea cake (Sri Lanka)

<b>Ingredients</b>	<b>Quantity</b>
Pigeonpea flour	200 g
Wheat flour	400 g
Eggs	2
Margarine	250 g
Cream	100 g
Sugar	2 tsp
Vanilla flavoring	5 ml
Baking powder	1 tsp
Salt	to taste

### Method

Mix cream, margarine, sugar and salt until frothy. Break the eggs into the mixture and beat well. Add vanilla and mix dry ingredients and fold into the cream mixture. Fill the cake cups and bake for 30-40 minutes.

## 26. Pigeonpea biscuits (Sri Lanka)

<b>Ingredients</b>	<b>Quantity</b>
Pigeonpea flour	200 g
Wheat flour	600 g
Sugar	150 g
Banana (mashed)	150 g
Eggs	3
Baking powder	1 ½ tsp
Milk	½ cup
Salt	to taste
Butter	150 g

### Method

Mix butter and sugar together. When creamy, beat eggs and add slowly to the butter mix while stirring. Add mashed bananas to the mixture. Sieve the dry ingredients and add to mixture. Roll the mixture flat and make shapes using cutters. Put the shaped biscuits onto an oiled baking tin. Bake at 180°C until light brown for about 12-15 minutes.



## 27. Meat stew with pigeonpea thickener (Sri Lanka)

<b>Ingredients</b>	<b>Quantity</b>
Meat (chopped or minced)	500 g
Pigeonpea flour	100 g
Onion (chopped)	50 g
Tomato (chopped)	50 g
Cooking oil	100 g
Salt and pepper	to taste

### **Method**

Heat oil in a pan and fry onion gently to brown. Add meat and 2-3 cups of water and cook it gently until tender. Add chopped tomatoes and continue heating. After a few minutes, add pigeonpea flour, stir slowly and simmer for another 20 minutes. Serve this dish with rice.

## 28. Blilah (Africa)

<b>Ingredients</b>	<b>Quantity</b>
Whole grain	500 g
Curry powder	10 g
Salt	To taste

## Method

Clean and wash whole grain. Add about two liters of water and boil the grains until they become tender. Mix curry powder to the whole cooked broth. Add salt. Sometimes, butter and sugar are added depending on taste.

## 29. Isyo (Africa)

Ingredients	Quantity
Pigeonpea dal	200 g
Maize (whole grain)	200 g
Onion (sliced)	20-25 g
Amchur (dry mango powder)	1 tsp
Cooking oil	3 tsp
Salt	to taste

## Method

Boil maize for 1 h and then add pigeonpea dal. Further, boil it for 30-40 minutes or until the product becomes soft. Fry onion in oil and add the above ingredients. Heat on low flame for 4-5 min and add amchur and salt to taste.

## 30. Irio (Africa)

Ingredients	Quantity
Pigeonpea dal	100 g
Maize (whole grain)	200 g
Curd (culture)	2 tsp
Salt	to taste

## Method

Boil pigeonpea dal until it becomes soft. Mash the dal and mix curd as a culture for fermentation. Incubate it for fermentation overnight at room temperature (about 30°C). Boil whole maize until it becomes soft and mix with fermented dal. The fermented dal can also be mixed with sweet yam and other root crops. The nutritive value of this product would be generally comparable with that of the irio. Also, in terms of protein digestibility it is better than irio due to fermentation.

## 31. Bhajji (India)

Ingredients	Quantity
Flour of pigeonpea dal or partially dehulled splits	200 g

Onion (sliced)	50 g
Turmeric powder	½ tsp
Red chilli powder	½ tsp
Cooking oil	100 g
Salt	to taste

### Method

Prepare a thick batter of flour dal or partially dehulled splits depending on the availability of materials. Add salt, turmeric powder, and chilli powder according to taste. Mix sliced onions and make small balls with the batter. Deep-fry them in oil and serve.

## 32. Akara (Africa)

Ingredients	Quantity
Pigeonpea dal	300 g
Onion (chopped)	50 g
Green chillies (chopped)	2-3
Cumin seed	½ tsp
Cooking oil	100 g
Salt	to taste

### Method

Clean and boil dal until it is soft. Crush the boiled dal into a thick paste and keep it aside. Heat some oil in a pan and fry onion, green chillies and cumin seeds until they turn brown. Add salt to taste and mix the contents with the paste prepared earlier. Make small flattened balls of the paste and fry them in a pan using cooking oil. Serve it hot with tomato ketchup.

### Nutritive value

Constituent	Percent
Protein	20.6
Fat	20.8
Sugar	3.5
Ash	6.0
Fiber	5.6
IVPD	52.9
Energy (k.cal.100 g <sup>-1</sup> )	393.5



### 33. Vada (India/Africa)

Ingredients	Quantity
Pigeonpea dal flour	100 g
Maize (dehulled) flour	100 g
Cooking Oil	100 g
Salt	to taste

#### Method

Mix pigeonpea dal flour and maize flour. Add one tablespoon of cooking oil to the mixed flours and prepare thick dough. Make small pieces of dough and deep-fry them. The fried product can be made salty or sugary depending on the requirement. For the latter, the product is dipped in sugar syrup and served.

#### Nutritive value

Constituent	Percent
Protein	19.9
Starch	3.5
Sugar	30.4
Fat	4.3
Ash	5.8
Fiber	4.0

### 34. Soup (Africa)

Ingredients	Quantity
Partially dehulled pigeonpea splits	30 g
Onion (chopped)	20 g
Tomato (chopped)	5 g
Curry powder	2 g
Cooking oil	10 g
Cumin seeds	½ tsp
Salt	to taste

#### Method

Wash pigeonpea splits and cook them until tender. Fry onions with curry powder and cumin seeds, add salt and chopped tomatoes. Add cooked splits and water when the mixture boils and further boil until a desired consistency is reached.

### 35. Mugungu (Africa)

Ingredients	Quantity
Green pigeonpea seeds	100 g
Maize (dehulled grain)	300 g
Onion (chopped)	20 g
Tomatoes (chopped)	20 g
Cooking oil	10 g
Green pepper (small pieces)	1 tsp
Salt	to taste

#### Method

Boil the dehulled maize to softness. Add green pigeonpea seeds and continue boiling until the pigeonpea seeds are cooked. Fry onions, green pepper and tomatoes in oil. Add boiled green seeds and maize to the fried ingredients and boil it further for 3-4 min. Add salt to taste and serve.

### 36. Sprouts (Africa)

Ingredients	Quantity
Whole pigeonpea seed	200 g
Onions (grated)	2
Turmeric powder	A pinch
Black pepper powder	½ tsp
Cooking oil	3 tbsp
Salt	to taste

#### Method

Soak the whole seeds in water overnight at room temperature. Discard the excess water and put the seeds in muslin cloth. Allow the seeds to sprout or germinate for 1-2 days depending on the requirement. Fry the grated onion and turmeric powder in oil and add sprouted pigeonpea. Fry it further for 5-6 min and add salt and black pepper powder.

#### Nutritive value

Constituent	Percent
Protein	21.1
Fat	11.4
Sugar	9.2
Ash	7.1
Fiber	9.5
IVPD	69.7
Energy (k.cal.100 g <sup>-1</sup> )	392.7

### 37. Utappa (Africa)

Ingredients	Quantity
Whole pigeonpea seed	100 g
Rice flour	50 g
Green chillies	2-3 g
Onion (grated)	15-25 g
Tomato (chopped)	10-15 g
Cumin seeds	1/4 tbsp
Cooking oil	20 g
Salt	to taste

#### Method

Soak the whole seeds in excess water overnight at room temperature. Discard the excess water and put the seeds in muslin cloth. Allow the seeds to germinate for two days. Remove seed coat from germinated seeds and mash the cotyledons and make a thick paste. Add the above mentioned ingredients. Cut the paste into smaller pieces and fry them on a baking pan.

#### Nutritive value

Constituent	Percent
Protein	21.4
Fat	7.2
Sugar	7.7
Ash	5.4
Fiber	4.0
IVPD	67.7
Energy (k.cal.100 g <sup>-1</sup> )	425.3

### 38. Bongko (Africa)

Ingredients	Quantity
Whole seed	200 g
Coconut grits	40 g
Ginger	4 g
Garlic	
Green chillies (chopped)	2-3
Cooking oil	3 tsp
Salt	to taste

## Method

Soak the whole seeds in water overnight at room temperature. Discard the excess water and boil soaked seeds to a desirable softness. Discard the excess water. Heat oil, fry garlic and ginger. Add coconut grits and green chillies. Sprinkle salt to taste.

## Nutritive value

Constituent	Percent
Protein	21.4
Fat	14.9
Sugar	6.8
Ash	5.3
Fiber	7.4
IVPD	67.2
Energy (k.cal.100 g <sup>-1</sup> )	413.8

## 39. Githeri (Africa)

Ingredients	Quantity
Dry pigeonpea seed	200 g
Maize (whole grain)	300 g
Salt	to taste

## Method

Boil pigeonpea seeds in sufficient water with dry and whole grain of maize for about 1 ½ hours. In case of githeri of green seeds, boil the maize for about ½ h and then add green seeds. Add salt according to taste and the product is ready as a major dish of rural areas in the country. In urban areas, it is fried with tomatoes and onions and then served.

## Nutritive value

Constituent	Percent
Protein	13.5
Fat	3.8
Sugar	5.0
Ash	4.2
Fiber	8.5
IVPD	70.5
Energy (k.cal.100 g <sup>-1</sup> )	348.2

## 40. Muthokoi (Africa)

Ingredients	Quantity
Whole pigeonpea seed	100 g
Dehulled maize grain	80 g
Carrot	25 g
Garlic (chopped)	2 g
Onions (chopped)	15 g
Cooking oil	3 tbsp
Mustard seeds	1/4 tsp
Cumin seeds	1/4 tsp
Salt	to taste

### Method

Cook whole seeds of pigeonpea and dehulled maize grains. Fry onions, garlic, mustard seeds and cumin seeds. Add carrot and mix thoroughly. Then add cooked pigeonpea and maize grains. Garnish the product and serve.

### Nutritive value

Constituent	Percent
Protein	15.0
Fat	8.7
Sugar	4.8
Ash	4.3
Fiber	6.0

## 41. Mukimwa (Africa)

Ingredients	Quantity
Pigeonpea seeds	200 g
Maize (whole grain)	150 g
Potato (chopped)	200 g
Spinach (leaves)	50 g
Onion (chopped)	30 g
Cooking oil	3 tbsp
Salt	to taste

### Method

Cook pigeonpea whole seed and maize to a desirable softness. Excess water is discarded after cooking. Boil and peel potatoes. Boiled and peeled potatoes are mashed and mixed with cooked pigeonpea, maize grains and chopped spinach leaves. Heat cooking oil in a pan and fry onions. Add the above ingredients and further fry for 2-3 min. Add salt according to taste and serve.

## Nutritive value

Constituent	Percent
Protein	14.5
Fat	6.7
Sugar	2.8
Ash	4.7
Fiber	7.0
IVPD	78.2
IVPD	71.5
Energy (k.cal.100 g <sup>-1</sup> )	330.7

## 42. Chipere (Africa)

Ingredients	Quantity
Dry seed	200 g
Maize (dehulled)	300 g
Salt	to taste

### Method

Boil the whole seeds until they become soft. Partially remove their seed coat. Separately, cook the maize and mix it with cooked and partially dehulled pigeonpea. Mash the whole content and add salt according to taste and serve.

## 43. Taameya (Africa)

Ingredients	Quantity
Whole pigeonpea grains	250 g
Onion (chopped)	20 g
Garlic (cloves)	3-4
Spinach leaves	10-15 g
Cumin seeds	1 tsp
Baking powder	1 tsp
Curry powder	5 g
Cooking oil	100 g
Salt	to taste

### Method

Soak the grains in water overnight (16-18 h) at room temperature. After soaking, remove the seed coat and grind the grains to a paste. Add salt, onion, garlic, curry powder, cumin seeds, baking powder and chopped spinach leaves and mix the whole content. Make small balls or round flat pieces and deep-fry them in cooking oil.

## 44. Legaimat (Africa)

Ingredients	Quantity
Whole pigeonpea seeds	300 g
Sugar	200 g
Cooking oil	100 g
Yeast	1 tsp
Baking powder	1 tsp

### Method

Soak the whole seed for 3-4 h and roast it in the oven at 200°C for 15 min. The soaked whole seeds can also be roasted in a sand bath at 250°C for 2-3 minutes. Roasting is performed to remove the beany flavor of pigeonpea. After roasting, remove the seed coat and make flour from the dal. Add required quantity of water, baking powder and yeast, and make a paste. Prepare smaller pieces of the paste and deep fry them. Put the deep-fried product in a thick sugar syrup that is prepared by boiling sugar in required quantity of water. The product can be stored in a refrigerator and served.

## 45. Makululu (Africa)

Ingredients	Quantity
Whole pigeonpea seeds	100 g
Maize (whole grain)	300 g
Groundnut or sesame (crushed)	30 g
Salt	to taste

### Method

Boil the whole seed of pigeonpea and maize together with groundnut or sesame until they become soft. Discard the excess water. Add salt to taste and serve.

### Nutritive value

Constituent	Percent
Protein	13.6
Fat	2.0
Sugar	3.2
Ash	3.4
Fiber	7.8
IVPD	60.5
Energy (k.cal.100 g <sup>-1</sup> )	380.3

## 46. Kande (Africa)

Ingredients	Quantity
Pigeonpea whole seed	100 g
Dehulled maize grain	200 g
Onion	20 g
Cooking oil	2 tsp
Coconut milk	1 cup
Salt	to taste

### Method

Boil the pigeonpea whole seed until they become soft. Generally, it needs to be boiled for nearly 2 h for complete softness. After boiling, discard the excess water and remove seed coat from the boiled seeds. Mix this with boiled dehulled maize grain. Fry onion in cooking oil. Add boiled pigeonpea, boiled dehulled maize and coconut milk, and continue boiling for 3-4 min. Add salt to taste and serve. This is eaten as a staple food for several days depending on the availability of pigeonpea.

### Nutritive value

Constituent	Percent
Protein	11.8
Fat	2.8
Sugar	4.9
Ash	3.7
Fiber	7.2
IVPD	58.3
Energy (k.cal.100 g <sup>-1</sup> )	370.0

## 47. Atap (Africa)

Ingredients	Quantity
Whole pigeonpea seeds	200 g
Groundnut or sesame paste or cooked sweet potatoes	100 g
Sodium bicarbonate	a pinch
Salt	to taste

### Method

Soak the pigeonpea seeds in water for 1 to 2 h. Add a pinch of sodium bicarbonate and then boil them to complete softness. Allow them to cool and



discard excess water. Then roast the groundnut and remove the seed coat manually. Make a paste of groundnut in a blender and mix it with cooked pigeonpea. Pound them together to make a fine thick paste. It is mostly eaten as such or in some cases as a side dish for breakfast.

### Nutritive value

Constituent	Percent
Protein	16.5
Sugar	5.8
Fat	2.3
Ash	4.3
Fiber	6.5
IVPD	70.5

### 48. Agira (Africa)

Ingredients	Quantity
Whole pigeonpea seeds	200 g
Salt	to taste

#### Method

Clean the seeds, grind them manually in a stone grinder and soak them in warm water for about 1 h. After soaking, remove the seed coat manually by rubbing them between palms. Thus prepared dehusked splits are boiled in sufficient water to a desirable softness. While cooking, stir it to make a thin paste. Add salt and serve it with millet bread, potatoes or cassava. It is also eaten with maize *ugali* or rice.

### 49. Pigeonpea and groundnut relish (Africa)

Ingredients	Quantity
Dry pigeonpea seeds	200 g
Peanut butter	150 g
Tomato	50 g
Onions	50 g
Salt	to taste

#### Method

Clean and wash dry seeds. Boil the seeds in enough water to complete softness. When soft, add peanut butter and other ingredients. Simmer for 10 minutes and serve fresh.

## Nutritive value

Constituent	Percent
Protein	20.5
Sugar	5.8
Fat	18.4
Ash	4.6
Fiber	3.9
IVPD	54.7
Energy (k.cal.100 g <sup>-1</sup> )	368.5

## 50. Spanish rice and pigeonpeas (Africa)

Ingredients	Quantity
Dry pigeonpea seeds	250 g
Rice	300 g
Pork or other meat	½ g
Tomato sauce	200ml
Onion (chopped)	50 g
Cabbage (chopped)	100 g
Oregano spice	2.5g
Chilli	1 tsp
Salt and pepper	to taste

## Method

Soak pigeonpea seeds overnight. Cook in same water until tender. Drain off water and keep aside. Cut meat into small pieces. Cook meat until brown on all sides. Add ingredients except rice and pigeonpea. Cook until tender. Cook rice separately and add to pot with meat. Add pigeonpea and cook for 15 minutes. Garnish the product and serve.

## Nutritive value

Constituent	Percent
Protein	13.5
Fat	3.0
Sugar	5.4
Ash	4.2
Fiber	6.3
IVPD	68.5
Energy (k.cal.100 g <sup>-1</sup> )	340.5

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## About ICRISAT



The International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT) is a non-profit, non-political organization that conducts agricultural research for development in Asia and sub-Saharan Africa with a wide array of partners throughout the world. Covering 6.5 million square kilometers of land in 55 countries, the semi-arid tropics have over 2 billion people, and 644 million of these are the poorest of the poor. ICRISAT and its partners help empower these poor people to overcome poverty, hunger and a degraded environment through better agriculture.

ICRISAT is headquartered in Hyderabad, Andhra Pradesh, India, with two regional hubs and four country offices in sub-Saharan Africa. It belongs to the Consortium of Centers supported by the Consultative Group on International Agricultural Research (CGIAR).

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