

Magic of Dals or Pulses in Homoeopathy

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Abstract

Objective: When we say staple food, cereals & pulses come to our mind. The concept of food security that encompasses 3As & 1U is not to be thought of without cereals & pulses. These are Availability, Accessibility, Affordability and Utilization. This holds good for pulses as well. The current article deals with homoeopathic medicines made from pulses [1, 17]. Before going to therapeutics, the production, consumption & export of pulses in India has also been discussed from the past till date. The role of green revolution in decreasing the production & consumption has also been discussed. All these processes are essential part of the process of nutrition [14]. As pulses are a part of our life, some of the basics on pulses have also been discussed in a paragraph. Since eating pulses is an integral part of our life, Homoeopathy also has made pulses an integral part of its therapeutics. The medicines prepared from pulses have been used by Homoeopathic practitioners since the advent of 19th century after it was introduced to the world by Dr. Samuel Hahnemann in 1790 [18].

Keywords: staple food, cereals & pulses, homoeopathic medicines, therapeutics.

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Food Security & Nutrition Security

The first concept to be understood is the concept of 'Food Security' that involves three words. These are Availability, Accessibility, Affordability and Utilization. This means food (pulses) should be

available in optimum quantity, should be in the reach of the people geographically and be in the reach of their purse. Finally, the body should be in a condition to use the food (pulses) for producing energy. Currently, the availability and accessibility of food (pulses) is

addressed through National Food Security Act (NFSA) since 2013 and was also addressed through Pradhan Mantri Garib Kalyan Yojana (PMGKY) during the recent pandemic [1-6, 22].

The second concept is nutrition security. The tag line of Indian Institute of Pulses Research (IIPR) of Indian Council of Agricultural Research (ICAR) is ‘Pulses for Nutrition Security’. Hence, nutrition security is integral to pulses. One might be food secured but not nutrition secured. Nutrition security is attained when food has quality. It is obtained when one gets micronutrients from various food sources like whole grain cereals, pulses, Green Vegetables (GV), Green Leafy Vegetables (GLV), dry and fresh fruits and seeds [2, 6, 16, 22].

Consumption & Production of Pulses in India

Currently in financial year 2022, about 53 grams of pulses was available per capita daily in India. The importance of pulses in India’s national diet cannot be understated. In the past, India was largest consumer

of pulses in the world. It accounts for 33% of the world area & 22% of world’s production. If we look into the history, in 1950-51, the per capita consumption was 60 grams per day but it was only 26 grams per day after 50 years in 2000-01. Pulses are consumed as Dal, a cheap source of plant protein. Further, it is seen that India is the largest producer of pulses that accounts for 27% of global production. It is also the largest consumer in the world & here it accounts for 27% of world’s consumption. As an importer, it accounts for 14% of all the pulse export in the world. For Pigeon Pea, Mozambique is the top exporter in the globe [7-11, 16].

When we see the trend in the production of food crops in India from 1950 to 2017 in million tonnes, we find that the production of minor cereals & pulses were almost stationary while the production of rice & wheat in 2020-2017 surpassed its own production during 1950-1959 crop year by 4 & 11 times respectively. The following table gives the details [12, 13].

Table 1: Production of pulses in million tonnes in India [12, 13]

Years	Production of pulses in million tonnes
1950-59	10.97
1960-69	12.08
1970-79	11.82
1980-89	10.63
1990-99	14.26
2000-09	13.73
2010-17	17.56

The per capita net availability of food stands for the availability of amount (Kg) of food per person per year in the nation. When we analyze the per capita net availability of food grains in India since 1951, after

green revolution although pulses did not lose the importance among the consumes like millets, per capita availability decreased from 22kg per year in 1951 to 19.9 kg per year in 2017 [13, 14].



About Pulses- Figure 1: Mandate Pulses (Source-IIPR, Kanpur, Uttar Pradesh) [16]

The website of ICAR-IIPR, Kanpur mentions Field Pea, Urdbean, Mungbean, Lathyrus, Rajmash, Cowpea, Horsegram & Mothbean as mandate crops.

The following paragraph is from the National Institute of Nutrition, Hyderabad [16, 19].

Pulses for legumes as they are also called are rich source of protein in our diets. In a vegetarian diet or a diet containing low amounts of animal foods, they are an important source of protein. The major pulses which find an important place in our dietaries are Tur (Arhar), Bengalgram, Blackgram, Greengram, Lentil. Bengalgram & Greengram are used as whole gram also. Others which are used as whole gram are Cow Pea, Field Bean & Rajma. In amounts used, pulses & legumes do not contribute much to the total mineral intake. However being rich in B- vitamins, they can contribute significantly to B-vitamin intake. Like cereals they do not contain any Vitamin A or Vitamin C but germinated legumes contain some Vitamin C [19].

The proteins of pulses or legumes are of low quality since they are deficient in Methionine and red gram is deficient in Tryptophan also. However, they are rich in Lysine. Hence, they can supplement proteins of cereals & the quality of the protein from a mixture of cereals & pulses is superior to that of the either one. The most effective combination to achieve maximum supplementary effect is 4 parts of cereal protein+ 1 part of pulse protein. In terms of the grains it will be 8 parts of cereals & 1 part of pulses. Pulses with their higher content of total fat that includes visible & invisible contribute along with cereals to meet the Essential Fatty Acids needs of an adult. The following table gives the details on nutrition of the pulses [19].

Table 2: Pulses & their Nutrition [19, 22]

Names of pulses & legumes	Main Nutrients	Serving size/or raw weight in grams	Carbohydrate in grams	Protein in grams	Fat in grams	Energy in Kilo Calories
Bengalgrams, Blackgrams, greengram, redgram, Lentil whole & split, Cowpea, Peas, Rajmah, Soyabeans, Beans	Energy, Protein, Invisible Fat, Vitamin B1, Vitamin B2, Folic Acid, Calcium, Iron, Fibre	25	15	6	Invisible	85

There are 16 names given in the appendix II where the names of the ‘pulses & legumes’ are given as a sub heading under the main heading ‘names of foodstuffs in Indian languages’ of the book ‘Nutritive

Value of Indian Foods’ by National Institute of Nutrition, Hyderabad. These are given below in the table with their common names & botanical names [19].

Table 3: Names of Pulses [19]

Common Names of Pulses	Botanical Names
Bengal Gram (Whole, Dal-Splited, Roasted)	Cicer Arietinum
Black Gram Dal	Phaseolus Mungo Roxb
Field Bean	Dolichos Lablab
Green Gram (Whole & Splited)	Phaseolus Aureus Roxb
Horsegram	Dolichos Biflorus
Khesari Dal	Lathyrus Sativus
Lentil	Lens Esculenta
Moth Beans	Phaseolus Aconitifolius Jacq
Peas	Pisum Sativum
Rajmah	Phaseolus Vulgaris
Red Gram dal	Cajanus Cajan
Soyabean	Glycine Max Merr

More About Pulses

In India, the big four dals (pulses) are Toor (arhar), Moong, Urad & Chana. Actually none of these is a lentil. Lentils in their unhulled state must have a double-convex shape. Lentils, the word has the same Latin origin from the word ‘lens’. Masoor is a lentil, Beluga lentils are too so named because they look just like black cavlar. However, none of the big four has a double –convex-shape. That’s why these four are called ‘legumes’, the term for the entire plant. The term ‘pulses’ actually mean ‘seeds’. That’s why these four are called pulses. When these are hulled & become split

versions these look & behave very much like lentils & that’s why these are so often mis-tagged. This is the difference between a pulse & a lentil [15, 16].

Pulses come from the family Fabaceae or Leguminosae. They carry an embryo inside. Pulses contain less starch & more protein & fibre. Dals need to be cooked for longer as pectin, that makes up 15% to 30% of the fibre start dissolving only around 88°C. After cooking, the textures of dals extend their texture. Cooked dal is often whisked while hot. The seeds swollen with water respond to the force of the whisking

by bursting wide open spilling their contents into the liquid & absorbing its flavors too [15].

Not all pulses behave the same way as they vary in protein, fibre & carbohydrate content. Toor dal is the seed of the pigeon pea, a drought resistant crop with very deep tap roots. In Malawi, the largest producer of this pulse in Africa, it is called 'desperation' food & 90% is exported of which a major buyer is India. Malawi's cuisine does not include recipes that make it palatable [15].

The pigeon pea seed coat is extremely tough when compared with other pulses. It is bound firmly to the cotyledons within by gums & mucilage. In South India, to make traditional recipes, toor dal is soaked in water, coated with red earth & sun dried to loosen the coat. Thereafter, these are dehulled using a manual grinder. The process reduced cooking time & saved fuel. Toor offers a bounty of protein & that's why it is prized in India. Toor can be a well concealed treasure, moong can be a nostalgia, chana is versatile while urad is a super power house [15].

Moong, Chana & Urad

Moong is the dal we all turn to when seeking comfort as we all soft khichdi in which moong dal is used. It is the dal during sick days & childhood. It is less smooth than toor but far easier to process. Moong dal is the easiest to digest of all our beans & pulses. It has low lwwls of non-digestible carbohydrates such as Verbacose, Stachyose & Raffinose. These Oligosaccharides present in beans, pulses and lentils produce flatus because humans lack the enzyme to digest these sugars. They instead pass through the stomach unaffected and are fermented by intestinal microbes forming gasses in the process [20].

Chanan dal & toor dal have some of the highest levels of Oligosachharides of all the dals. Soaking, germinating, fermenting & cooking all help reduce the levels of these harmless but discomfort causing sugars. The naturally low levels of Oligosaccharides im moong dal is why it is one of the first solid foods introduced to children in India. This is why moong was the dal in the comfort food khichdi of our childhood [20].

Urad dal contains a mucilage called Arabinogalactan that traps gasses produced during fermentation, somewhat like Gluten does in wheat when we make bread. This special property of urad has been used for centuries to make soft, spongy Idlis without the need for any leaveners [20].

Chana dal is packed with so much fibre that just 100grams can make up 31% to 67% of the daily fibre requirement for a human. The daily requirement of fibre stands at 25 grams for women & 38 grams for men. Chana dal is 12 to 17% fibre. This high fibre

content is the reason chana holds its form more firmly than any of the other dals. This property is used in our recipes too. We add a handful of chana to a dish of moong as the firm texture of chana breaks the monotony of the smmoth moong. The same analogy holds good for the Lauki (Bottle Gourd) & chana sabzi or curry as it gives us soft but bite also [20].

Homoeopathy & Pulses

The current article also deals with those drugs that are from the Leguminosae family which means these are pulses that are edible & not edible. As the article focuses on pulses, the medicines prepared from the Leguminous plants are included here [17, 23].

1. The first drug from Leguminosae family is 'Caesalpinia Bonducella' & its homoeopathic uses are in fever, headache, hepatosplenomegaly.
2. The second drug from Leguminosae family is 'Clerodendron Infortunatum' & its Homoeopathic uses are in gastric problems, worms & chronic fever.
3. The third drug from Leguminosae family is 'Desmodium Gangeticum' & its uses are in fever, headache, meningitis, typhoid, wry neck.
4. The fourth drug is 'Dolichos Pruriens' from Leguminosae family- the homoeopathic uses are in bloated abdomen, constipation, haemorrhoids, pruritus, senile pruritus, sore throat.
5. The fifth drug from Leguminosae family is 'Janosia Asoka' & its uses are in uterine disorders & menorrhagia.
6. The sixth drug is 'Lathyrus Sativus' from Leguminisae family- the homoeopathic uses are emaciated limbs, infantile paralysis, paralysis, poliomyelitis, rheumatism.
7. The seventh drug is 'Phaseolus Nanus' or 'Phaseolus Vulgaris'. From Leguminosae family- the homoeopathic uses are dropsy, heart disorders, diabetes, palpitations, prostate & albuminuria.
8. The eighth drug is 'Psoralea Cor' from Leguminosae family. Its uses are in leucoderma & in streptococci infections.

CONCLUSION

Among the edible pulses, the Bengal Gram has the lowest Glycemic Index (GI). The GI of chana dal is only 13. The lead author advises all Homoeopaths to advise patients to eat chana dal twice a week while prescribing 'Phaseolus' [21].

The horse gram is also another edible dal which is excellent for the excretory system. It increases the urine flow that helps in expulsion of kidney stones. In all cases of problems related to the excretory system, advise them to eat the 'Kulthi' or horse gram dal twice a week [24].

Declaration of the lead author

Prof. Shankar Das was the Ph.D. guide of the lead author at Tata Institute of Social Sciences, Mumbai during 2011-18. Prof. D.P. Singh was the teacher of the lead author at Tata Institute of Social Sciences, Mumbai during 1995-97. The lead author also certifies that he has expressed his personal opinion based upon his public health and clinical experiences. The treatment approach or the medicines suggested are only suggestive in nature.

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