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Pulses are versatile – they keep us healthy, they can be incorporated in the daily menu right from soups and starters to salads and main dish and even dessert, and they also stabilize the soil by fixing nitrogen. No wonder, the United Nations has declared the year 2016 as the ‘International Year of Pulses’.

Each and every aspect of pulses right from cultivation to supply, research and development to uses in diet shall be reviewed and revamped. The small nutri-packets shall finally get their due. The announcement was officially made in December 2013. The idea was the brainchild of Mr. Hakan Bahceci who after becoming the President of CICILS (now Global Pulse Confederation) in 2011 decided to promote the pulses for the betterment of mankind as a whole. His efforts paid off when the UN supported his mission and made the announcement of IYP 2016.

Pulses – Nutritive & Healthy
A pulse is also known as grain legume. Pulses are leguminous crops yielding one to two seeds within a pod. According to the Food and Agriculture Organization (FAO) the term is reserved for crops harvested for dry seed. This thus excludes green pods and also oil seeds like soy beans and peanuts.

Pulses have been part of human diet for thousands of years. The archaeological evidence dates back to 7 to 8 thousand years. Chickpea records date back to 6250 BC, but scientists are confident they will be pushed back to 8000 BC. The evidence of peas dates back to 7000 BC! It is a friendship of 10000 years!

Pulses, lentils and peas were part of the earliest agricultural revolution wherein they were domesticated along with wheat and barley. Humans continued to domesticate and develop locally found pulses. As travel gained momentum pulses too jumped on the wagons and ships and travelled near and far. They soon became an important and
Pulses are a very adaptable crop that can grow in the hot dry climate of the Middle East to the super freezing temperatures of the Siberian Tundra. Once dried well and stored in airtight containers, they have a long shelf life. Pulse crops are important for environmental reasons too. Being a part of the legume family, they have nitrogen-fixing bacteria on their roots. This improves the soil quality naturally. Many pulse plants are used as green manure. After harvesting, the roots of the pulse plants are allowed to remain in the soil and this adds to the soil quality.

Pulses conserve water too! Growing a pound of pulses requires just 42 gallons of water while soybean demands 216 and peanuts guzzle 368! Pulses are also used as animal feed. All these factors make them a very sustainable crop. No wonder the global pulse market is a whopping 60 million tonnes and is bound to grow after people find more uses for them.

In the past two to three years, pulses were the cheapest source of proteins. Perhaps in the coming years, the right policies shall see their prices come down.

India is the largest producer (approximately 18.5 million tonnes) and also the largest consumer (approximately 22 million tonnes) of pulses. So we end up importing approximately 3.5 million tonnes.

Indians like their pulses whole as well as split into dals. Pulses like pigeon pea (tur), green bean (mung), black gram (urad), moth bean (matki or moth) and rice bean originated in India. Pulses are very adaptable and grow in the hot dry climate of Middle East to super freezing temperatures of the Siberian Tundra. Once dried well and stored in airtight containers they have a long shelf life.

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Pulses and cereals balanced the dietary protein even when their nutrient content was not known! Now we know that pulses are rich in proteins. Pulses are a major source of proteins for the vegetarians and the best source of proteins for the vegans. Till their prices skyrocketed in the past two to three years, pulses were the cheapest source of proteins. Perhaps in the coming years, the right policies shall see their prices come down.

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Nutritive Value of Pulses

Pulses are especially rich in proteins (20 to 25%). The pulse proteins are deficient in the essential amino acid methionine. But our ancestors somehow knew that when combined with cereals (deficient in lysine) they supplement each other and supply protein comparable with animal protein. Look at the many combinations we traditionally consume like rice and dal, idli-sambar, chole bhature, etc. Adding a tablespoon or two of curds or milk improves the protein quality further. To achieve the maximum supplementary effect eight parts cereals should be combined with one part pulses.

Pulses have 55-60% of carbohydrates which are of the complex type. They are digested slowly. When eaten with the skin or husk or seed coat they supply a fair amount of dietary fibre. The fibre also slows down the digestion and absorption of the carbohydrate fraction and the blood sugar rises slowly. This is a boon to diabetics.

Pulses are good sources of major minerals like calcium, magnesium, zinc, iron, potassium and phosphorous. They are good sources of B vitamins like thiamine, riboflavin and niacin. These are enhanced during sprouting. The vitamin C content increases many folds during sprouting. The vitamin A content is in the form of carotene. Another good news is that the vitamins and minerals are present in the body of the pulses, so no losses occur during removal of the seed coat.

Pulses are versatile

Pulses have been part of human diet since eternity. In every part of the world people incorporated locally available pulses. Pulses are versatile. Their use is not restricted to just whole pulse dishes and dals to be consumed with rice and chapatti. Pulses can be incorporated in the daily menu right from soup and starters followed by salads and main dish and even dessert.

Who knows this better than us Indians? Rasam, sprouts salad with tomato and cucumber; papad, mung dal pakodas or hariyali kebabs; khichdi or rice and dal, chapatti and usal and puranpoli make sumptuous pulse-based meals. Who can forget yummy motichur laddu and Mysore paak? Idli and chutney, sambar-vada, dosa, appam, dhokla, chole and chana are tasty and healthy foods. Popular snacks include sev, fafa; fried pulses are popular fried snacks. Roasted chana and peas and chana-jor are healthy munchies. Nowadays flaked and roasted pulses are being marketed for the health conscious. Bhajani is flour made from roasted grains and pulses and is used to prepare chakli and theplas. The list is very long and ingenuity is the limit.

People all over the world are great fans of pulses. Traditional middle-east dishes Hummus and Falafel have become very popular. In fact Hummus, the chickpea dip, was voted ‘Dish of the Year’ by Bon Appétit magazine. Most countries have their signature pulse dish e.g. Egypt has Koshari, Mexico has Frijoles a la Olla, Peru boasts of Tacu Tacu, Venezuela raves about Pabellon Criollo, to name a few. The Japanese boast of a variety of desserts prepared from Adzuki beans e.g. Adzuki beans filled buns and pies, tarts and even ice cream! So much for versatility!

Do you know that half a cup serving of cooked beans is equivalent to 30 g meat? Moreover, one cup of dried pulses on soaking and cooking yield 2.5 to 3 times their volume and are very economical too! Tinned beans and peas are very handy and so are frozen peas. If cereals are King then pulses are Queen!
Flip Side of Pulses
The pulses have certain compounds that are produced as a protective mechanism but act as anti-nutritional factors for humans. They cause mild to serious discomfort. The good news is that they can be controlled or rendered harmless by some pre-processing like soaking, sprouting or germinating before cooking. It is unwise to eat them raw. Only mung and moth beans can be safely consumed raw after sprouting. A glance at the hidden enemies:

1) Trypsin inhibitors are produced by the plant to prevent degradation of storage-proteins during seed maturation. These are proteins that inhibit the action of enzyme Trypsin. This interferes with digestion of proteins and reduces their utilization. Trypsin inhibitors are inactivated easily from dals by heating as during cooking.

2) Haemagglutinins or phytoagglutinins or lectins are produced by the plant to ward off fungal and insect attack. In the human body they impair digestion and absorption of amino acids. They too are heat labile.

3) Cyanogenic glycoside on hydrolysis by an enzyme forms hydro-cyanic acid. This interferes with tissue respiration. Fortunately most pulses except Lima beans have Cyanogenic glycoside within safe limits. It is unwise to consume pulses in large quantity for the same reason.

4) Goitrogenes are present in lentils and interfere with iodine absorption by the thyroid gland. This effect is seen if lentils are eaten in excessive quantity and the diet is deficient in iodine.

5) Tannins are condensed polyphenolic compounds. They are present in the seed coat of pulses and legumes. They too are villains due to their iron-binding action. They bind proteins and hamper their absorption. They also interfere with the digestive action of enzymes. Eating dals without skin is the easiest solution. Red kidney beans and Black gram have higher quantity of polyphenolic compounds.

However, the antidotes are simple:

1) Soaking for at least 8-10 hours and discarding the water 2-3 times during this period is the easiest solution. Many anti-nutritional elements are leached out into the water and lost when the water is discarded. Soaking also reduces cooking time, thus saving precious time and fuel.

2) Sprouting or Germination also decreases anti-nutritional content. Germination for more than 24 hours is advisable. After that wash the sprouts and then use or cook.

3) Cooking inactivates almost all the remaining anti-nutritional factors. It is wise to cook the pulses before consumption. Only sprouted moth beans and mung beans can be eaten raw safely. However, don’t overcook the pulses.

4) Fermentation increases the digestibility, nutritive value and palatability also. The vitamin B and C content increases. It also eliminates toxic substances and improves digestibility.

5) Digestion. Pulses are difficult to digest but soaking, sprouting and cooking aid in making them more digestible. Fermentation as in idli and dhokla also helps. Pulses are known to cause gassiness in many people. The oligosaccharides of the raffinose family are the culprits. The three stooges are verbascose, stachiose and raffinose. These are not broken down and cause gassiness. Eating greens, salad and ginger helps.

There is no dearth of recipes using beans. Since the announcement of IYP2016, pulse associations of all the countries have geared up to promote pulses. Various programmes to celebrate the pulses have been planned. The Indian Pulse Association too is playing a significant role.

So, thumbs up to the Pulses!

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