

PULSE PROCESSING

Dr. Mitali Madhumita

Introduction

- Pulses → dry, edible seeds of plants in the legume family.
- Pulses are rich in protein, fiber and mineral (Zn, Iron, Phosphorous) and vitamins. Low in fats.
- Protein content is high. More than twice than the cereals grains
- **Carbohydrate:** Food pulses contain about 50-60% of total carbohydrate including starch, soluble sugar, and fiber.
- **Minerals:** Pulses are importantly sources of calcium, magnesium, zinc, iron, potassium and phosphorous.
- **Vitamins:** Pulses contain small amount of carotene, the pro-vitamin A.
- These pulses are consumed in the form of dehusked split pulses.
- Madhya Pradesh is India's largest pulse producing state, which accounts for 23% of total pulse production in the country.
- India is the largest producer, consumer and importer of pulses in the world.

- Major pulses grown in India are chickpeas (gram), pigeon pea (tur or arhar), moong beans, urd dal, masur (lentil), peas and various kinds of beans.
- Pigeon pea is the 2nd important pulse crop after the Chick pea.
- The average % of husk in Arhar is 15% and endosperm is 85%.
- Chick pea husk content is 10-12%.

Toxic constituents of Pulses

- The seeds of pulses include both edible and inedible types. Even amongst the edible legumes toxic principles occur and their elimination is important in order to exploit them for edible purposes.

Elimination of toxic factors

- soaking,
- heating
- fermentation

- Correct application of heat in cooking which helps in digestion.
- Heat causes the denaturation of the proteins responsible for trypsin inhibition, haemagglutination and the enzyme responsible for the hydrolysis of cyanogenic glycosides
- Fermentation which yields products more digestible and higher nutritive value than the raw pulses

Processing of Pulses:

Soaking: This is the first method of preparing pulses for consumption. It reduces the oligosachharides of the raffinose family and also reduces the phytic acids in pulses.

Germination: it also removes the nutritive value of food pulses. The ascorbic acid content of pulses increases after 48 hours of germination. The riboflavin, niacin, choline and biotin contents of all pulsa also increase during germination.. This process reduces or eliminates most of the antinutritional and toxic factors in pulses.

Decortication: A simple method is to soak the seeds for a short time in water, the husk takes up more water than the seeds and may be easily separated by rubbing while still moist.

Alternative, the soaked grains may be dried and the husk removed by pounding and winnowing. Roasting also renders the husk easier to separate.

Cooking: Cooking destroys the enzyme inhibitors and thus improve the nutritional quality of food pulses. It improves palatability.

Fermentation: this process improves digestibility, palatability and nutritive value. Improves the availability of essential amino acids and nutritional quality.