

# ANTI NUTRIENTS COMPOUNDS

# ANTI-NUTRITIONAL COMPOUNDS

- These compounds inhibit the availability of one or more nutrients.
- They function as the immune system of the plant, offering protection from the radiation of the sun, foraging by animals and from invasion by micro-organisms.
- Raw soybeans would inhibit the growth in rats and will result in enlarged pancreas unless the seeds are cooked.

- Proteinase inhibitors were capable of inhibiting the growth of insect larvae.
- Therefore, the presence of those proteins and chemicals are part of the survival mechanism of the species.
- Factors such as protease inhibitors can interfere with protein utilization if ingested, lectins adversely affect carbohydrate utilization, and gossypol in cottonseed can tie up iron

# ANTI NUTRIENT COMPOUND IN PLANT FOOD

SLNO.	Antinutrient	Major dietary sources
1.	Phytic acid or phytin	Whole legume seeds and cereal grains
2.	Fibre (for example, cellulose, hemicellulose, lignin, cutin, suberin)	Whole cereal grain products (for example, wheat, rice, maize, oats, barley)
3.	Tannins and polyphenols	Tea, coffee, beans, sorghum
4.	Oxalic acid	Spinach leaves, rhubarb
5.	Hemagglutinins (for example, lectins)	Most legumes and wheat

## **Methods to remove anti-nutritional compounds:**

1. Boiling
2. Toasting
3. Micronization
4. Extrusion
5. Roasting
6. Irradiation
7. Fermentation
8. Cooking
9. Enzyme treatment

<b><u>SL NO.</u></b>	<b><u>TREATMENTS</u></b>	<b><u>EXPLANATIONS</u></b>
<b>1.</b>	<b>Steaming</b>	<b>Heating at ultrahigh temperatures (&gt;100 °C)</b>
<b>2.</b>	<b>Blanching</b>	<b>Mild boiling (75 °C – 95 °C) to inactivate Endogenous enzymes and avoid cooking.</b>
<b>3.</b>	<b>Extrusion</b>	<b>HTST processing involving a combination of high temperature, pressure, and shear processing</b>

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<b>4.</b>	<b>Roasting</b>	<b>Dry heating at 120 °C – 250 °C</b>
<b>5.</b>	<b>Soaking</b>	<b>Exposure to water and salt solutions with or without additives to encourage ANF loss</b>
<b>6.</b>	<b>Processing chemical and chemical modification</b>	<b>Treatment with thiosulphite, cu-salts (ascorbic Acid).</b>

# **Classification and types of legumes and oilseeds**



# LEGUME CLASSIFICATION

- Leguminosae family is classified into three sub-families:
  - Papilionoideae, Caesalpinioideae, and Mimosoideae.
- Other lesser known members of the legume family include :
  - Pulses, Alfalfa, Lentils, Peanut etc.
- Legumes include plants that are trees, shrubs and herbs (perennial or annual plants).
- Some legumes are toxic, some grow in dry soils, while others are edible and love moisture.

# OILSEED CLASSIFICATION

## Temporary oilseed crops:

- a. Castor bean,
- b. Linseed
- c. Mustard
- d. Niger seed
- e. Rapeseed
- f. Safflower
- g. Sesame
- h. Sunflower.

## Permanent oilseed crops:

- a. Coconuts
- b. Olives
- c. Oil palms.