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Black and White Thinking doesn't Work in the Gray Complex World of Antinutrients

Production Process for High-Quality Plant Based-Protein Isolate with Low Content of Oligosaccharides and Phytate

Soaking of legume seeds during 12 hours. Wet milling of seeds to flour.

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Water addition, pH adjusted to 7,3 with NaOH, extraction of soluble proteins. Decantation of nonsoluble materials.

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Clarification of protein juice for removal of soluble fibres and residual starch. Then pasteurisation 72°C.

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Hollow fibre ultrafiltration, 100kD MWCO. Removal of oligosaccharides. Diafiltration.

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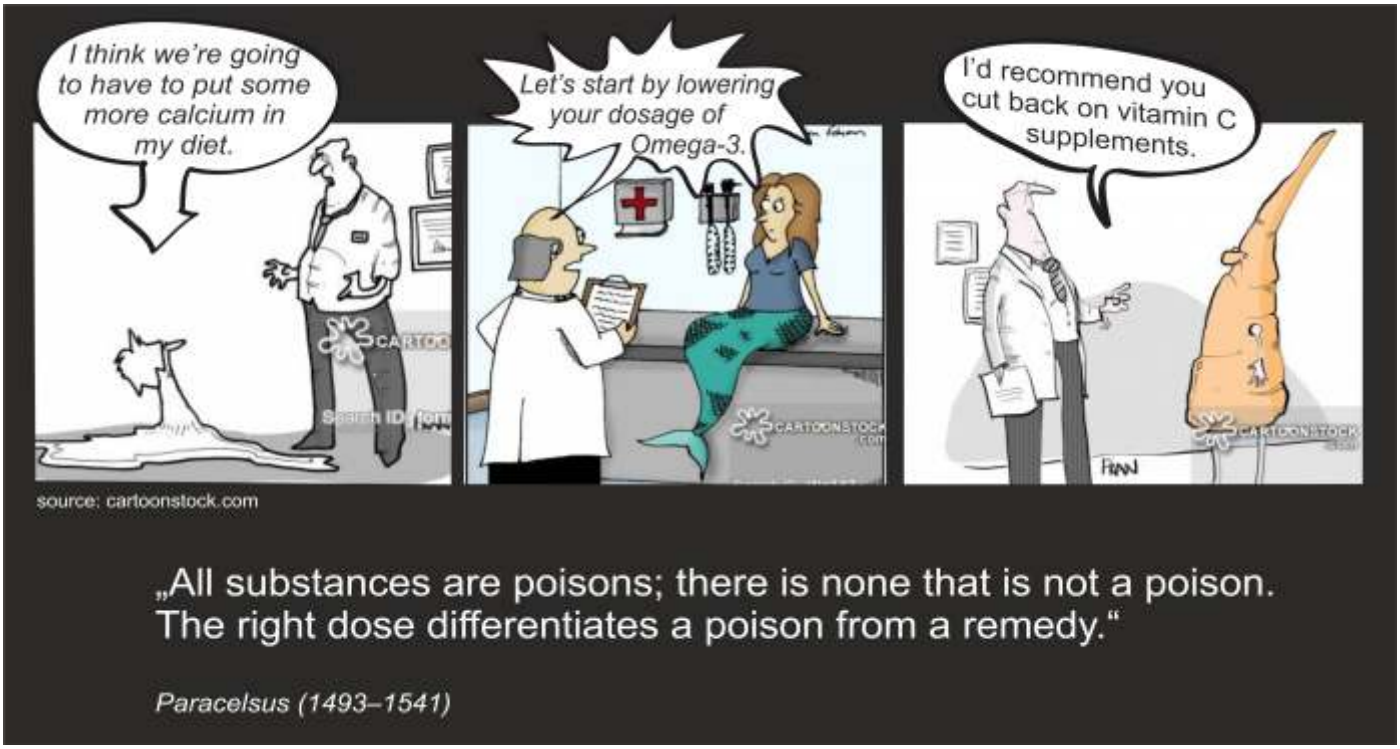
pH adjusted to 8,3 with NaOH, pasteurisation at 85°C. Drying with rotary wheel spray drier.

The process for plant based-protein isolate production, resulting in low content of phytate and oligosaccharides.

- Oligosaccharides are removed from the protein fraction through ultrafiltration.
  Ultrafiltration of 50- and 100-kD molecular-weight cut offs (MWCOs) is used according tot he source, and both effectively separate the oligosaccharides from the protein.
- Phytate degradation is achieved by incubation of the plant based-protein solution by addition of exogenous phytase enzyme. An almost complete degradation of inositol hexa-, penta-, tetra-, and triphosphates is reached using an incubation time of 1 h.
- The reduced content of oligosaccharides and inositol phosphates is likely to result in reduced flatulence and improved mineral bioavailability.

Many legumes, contain a variety of antinutritional and antiphysiological factors which negatively influence the quality of their proteins. It is therefore of great importance to use a production process resulting in a protein isolate devoid of the antinutritional and antiphysiological factors. High-quality plant based-protein isolates with improved nutritional and physiological properties can beneficially replace other protein sources.
The oligosaccharides are considered to cause flatulence in man and animals (1-3), which obviously is a disadvantage. Phytate is a recognized inhibitor of iron and zinc absorption in man (4-11), and phytate has also been shown to decrease the protein availability. A formula with low content of oligosaccharides and phytate is therefore likely to result in reduced flatulence and improved mineral bioavailability.
Control of the microbiological quality was obtained by minimizing the processing time, thereby restricting the growth of microorganisms.



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