

Protein Power of Plants – More Than Vegan Meat Substitution

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The ecological and environmental awareness of consumers is growing, together with a common desire for a “healthier” diet. We observe an increasing demand for more controlled and certified products, which are labelled non-GMO, organic, kosher or halal. A clear trend for plant-based ingredients can be witnessed for food, cosmetics and its packagings. Vegan alternatives for thickening agents, stabilizers, or meat replacements, which aim at the reduction of animal-based products, are under development. Proteins of plants can help to meet above-mentioned requirements.

The list of protein-rich sources is fortunately long and ranges from legumes (e.g. soy beans, peas, chickpeas, lupins), grains (wheat), nuts (sunflower, pumpkin) up to mushrooms or algae.

In particular, oil-containing legumes and grains are very attractive sources: In a preliminary step its oil is recovered by pressing, resulting in a protein-enriched cake. A subsequent step, which removes fat by extraction, further increases the protein content.

A typical seed initially contains 26 wt.% of protein and 45 wt.% after pressing. Typically, a final protein content of up to approx. 55 wt.% can be achieved by supercritical CO₂-extraction. Eventually, the literally defatted powder is significantly less prone to oxidation. In addition, the resulting structure offers many advantages, when formulated in liquids and pastes. The extrusion process for production of meat substitutes is facilitated and more efficient.

As a toll manufacturer for high-pressure CO₂-processes, NATECO₂ has been producing various powerful protein products, especially those, which are certified organic, non-GMO, kosher or halal. Product references, challenges and possibilities, which demonstrate the versatile advantages of supercritical applications, will be presented and discussed.