

Lupinus mutabilis for feed and food

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Lupins have contributed thousands of years to the human and animal diet. First written reports about lupin are on clay tablets from old Mesopotamia thousands of years BC. The Andean lupin was used by pre-Inca civilizations in the Andean mountain thousands of years BC. Lupins are rich in proteins, lipids, carbohydrates and fibres. Lupins contain virtually a minimum of starches, but have high amounts of slow digestible oligosaccharides. Lupines are therefore an excellent source for prebiotic food products. The Andean lupin has a lipid content around 20% (15-24%) with more than 80% unsaturated fatty acids. This makes Andean Lupin oil a healthy choice for food products.

Lupins have bitter and sweet varieties. Sweet varieties with low or very low alkaloid contents ($<.02$ or $<.001$) are available making these very suitable for human and animal consumption. Sweet varieties of the Andean lupin are available and these will be used in the LIBBIO project for further breeding.

White, blue and yellow lupin are already used in many for products as either functional ingredient or as main component. Examples are lupin milk, yoghurt, spreads, ice cream, chocolate, meat-analogues, bread and more. The Andean lupin offers new possibilities for food applications because of its high oil content. So high lipid products such as mayonnaise, margarines, frying oils and dressing oils will be developed in the project. The LIBBIO project will also develop protein based food products such as lupin yoghurt, lupin cheese and also ice-cream! These products have a prebiotic action, contributing to healthy intestines.

Lupins are also high in secondary plant metabolites such as vitamins, carotenoids, anti-oxidants, flavonoids and phytosterols. These plant components contribute to a healthy diet and the occurrence will be determined in the Andean lupin.

Lupins have a long tradition as component of the diet of pigs, poultry and cattle. Due to high and cheap imports of soybean meal, the use of lupin in animal feed is reduced. With increasing world market prices for soy products, it becomes more and more interesting to use lupins as feed ingredients. The soy-business case is based upon oil extraction for high valued food purposes and the resulting soy meal is used as feed material. The same business case is applicable for the Andean lupin and makes the lupin meal a cost effective alternative for soy meal. First experiments showed that lupin can be included with more than 10% in the starter diet for pigs, completely replacing all the soy ingredients.

Andean lupin is a promising raw material for food and feed products. Andean lupin can replace most of the soy ingredients in food and feed products. This makes the Andean lupin a very promising new raw material for consumer applications. The LIBBIO project will analyse the lupin ingredient functionality and will develop several prototypes for real tasting experiences!