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The potential of pea concentrates

Global demand for protein sources

Global demand for food will rise dramatically in the coming years. In a world with currently scarce supply of animal protein, major global opportunities exist for the use of vegetable proteins and functional starches, especially if produced in a sustainable manner [↗](#). It is, therefore, believed that the increasing demand and global competition for proteins in human food, pet food and livestock feed will boost the search for alternative and sustainable protein sources to ensure food security [↗](#).

As an accepted part of the diet in almost every culture, pulses play an important role in nutrition and health. In general terms, pulses are nutrient-dense, low in fat, have a low glycaemic index, are rich in folate and essential minerals with high levels of complex carbohydrates including fibre, and also are a good source of protein [↗](#). Pulses belong to the 'leguminosae' family and the Federal Agriculture Organization (FAO) limits the definition of pulses to

crops harvested solely for dry grain. Pulses used for human consumption mainly include yellow peas, beans, lentils, chickpeas and faba beans. The nutritional properties of pulses have been extensively investigated and have been reported to impart physiologically beneficial effects in humans and animals, such as improvement in blood sugar levels, blood cholesterol reduction, protection against some types of cancer and minimization of the risk for type-2 diabetes [↗](#).

Role in grain-free pet foods

Trends in the global pet food market show that low-grain, selected grain and no-grain foods are becoming more important to consumers in Europe (*B. Hanson, pers. comm.*); 'Grain-free' and 'natural' trends are already the standard for pet foods trends in the USA and, according to Lange [↗](#), market analyzer and speaker at Pet Food Forum Kansas 2016, grain-free food accounted for 45.5% of new products while the natural foods for about 80% of

BOTTOM LINE

Pulses have been part of human food for thousands of years. There is fairly consistent evidence from experimental studies supporting the benefits of pulse consumption in human health. The documentation process in dogs and cats has significantly increased in the last years, as well the number of pet food

formulations containing pulses. It is also clear that pulses – and particularly peas – are likely to become a key standard ingredient in 'natural' 'grain-free' and 'sustainable' formulations as product developers recognize their importance in their ingredient options.



new products on the US market. According to Debbie Phillips Donaldson of Pet Food Industry, pet food products containing yellow peas (*Pisum sativum*) have increased by 21% in the past two years [↗](#).

Benefits

The question is what benefits can be found in yellow peas that make them attractive as alternative ingredients in pet food?

From a market perspective, yellow peas are ideal ingredients in the 'grain-free' and 'natural' (if naturally processed) categories. 'Pea concentrates' are produced by air classification technology, a dry and environmentally-friendly process that preserves all nutrients naturally present in peas, as well as its native functionality. On the

other hand, pea isolates are conventionally derived through a wet fractionation process, which utilizes more energy, high levels of water and produces high levels of waste compared to dry fractionation [↗](#).

Yellow peas, as well as other pulses, are sustainable ingredients since they nourish the soil in a natural way, allowing for a better crop rotation [↗](#) and reduction in green-house gas emissions [↗](#).

In addition to their high nutritional value, with their important levels of essential amino acids, low glycaemic index, folate and minerals, pulses also have a remarkable functionality. Both starch and fibre from pea concentrates have important water and oil binding capacity and particularly pea starch has the wonderful capacity to gel in combination with cold water. [▶ SEE NEXT PAGE](#)

[↗ globalpets.academy/ingredients2016](https://globalpets.academy/ingredients2016)

Pea starch concentrate is an excellent functional binder that can be used in dry (pelleted and extruded products) and wet pet food formulas, especially in partial or total replacement of potato as an ingredient. Several benefits have been reported when potato is partially replaced by pea starch concentrate, including a reduction in formulation cost, better processability, equally acceptable palatability and digestibility of the feed and stable product quality [↗](#).

In addition, pea protein concentrate represents a low allergenic source of protein that can be used in meat-like texturized chunks or for increasing protein levels in high-protein diets. Pea protein is specially rich in essential amino acids lysine and arginine, having a high digestibility and nutritional value, resembling to fish protein. From a food safety perspective, yellow peas are no GM products (not genetically modified). They are low in mycotoxins, especially compared to wheat, corn and oat, and are low in anti-nutritional factors compared to soybeans.

Various scientific studies have shown the benefits of pulses in human nutrition as well as in other animals.

These include:

BLOOD SUGAR REGULATION AND WEIGHT MANAGEMENT

Pulses can help blood glucose regulation in obese dogs. A diet containing yellow field peas reduced insulin response after a glucose challenge in obese dogs, indicating improved metabolic health [↗](#). In addition, pulses, and especially yellow peas, are rich in resistant starch (non-digestible starch). Resistant starch can modulate blood glucose levels after a meal and therefore could be considered a valuable tool for the dietetic treatment of diabetes and obesity in dogs [↗](#);

GUT FUNCTIONALITY Diets high in fibre and protein have been shown to improve satiety in dogs [↗](#);

FLATULENCE Pulses are rich in complex sugars such as oligosaccharides. These sugars, such as raffinose, stachyose and verbascose, escape digestion in the small intestine and can ferment in the gross intestine, generating gas. Though few articles have been published in this area, no detrimental effects have been reported in diets when 25% navy bean powder was added in a dry food formulation for dogs [↗](#). Pea starch concentrate can also be used in high inclusions (35%) in dry dog recipes without having any negative effects in gut functionality (*L. Gil Martens, pers. comm.*);

CHOLESTEROL Pulses are an importance source of dietary fibres that promote various beneficial physiological effects, including water-holding capacity, viscosity, bulk, fermentability [↗](#), and the ability to bind cholesterol and bile acids [↗](#). The prevalence of gallstones in dogs is reported to be reduced by dietary fibre;

ANTIOXIDANT EFFECTS Pulses are rich in antioxidants, such as flavonoids and phenolic compounds and anti-inflammatory compounds which support the health of blood vessels.

Pea concentrates are an important new ingredient in pet foods: they play a positive role in nutrition and general pet health as well as delivering palatability. Further, peas have functional benefits in extrusion, are a cost efficient alternative to other proteins and starches whilst being a sustainable resource. Peas deliver all this in one ingredient. ◆