

AM Nutrition Pea Hull Fiber in Petfood (1)

Natural source of dietary fiber

Yellow Peas are important sources of energy, protein, minerals and vitamins, but also an important source of soluble and insoluble fibers. According to Pet Food industry magazine (Dec. 2010), Pea hull fiber can be found in an increasing number of Pet food formulations, especially in the premium, holistic and alternative segments. Pea hull fiber is a native fiber, which improves the gut functionality through prebiotic and laxative effects.

AMN Pea Hull fiber (PHF) is obtained from dehulling of yellow peas (*Pisum Sativum*). The hulls are separated from the seed in a dry natural process, which does not involve chemicals or water. The composition of pea hull fiber is indicated in Fig.1

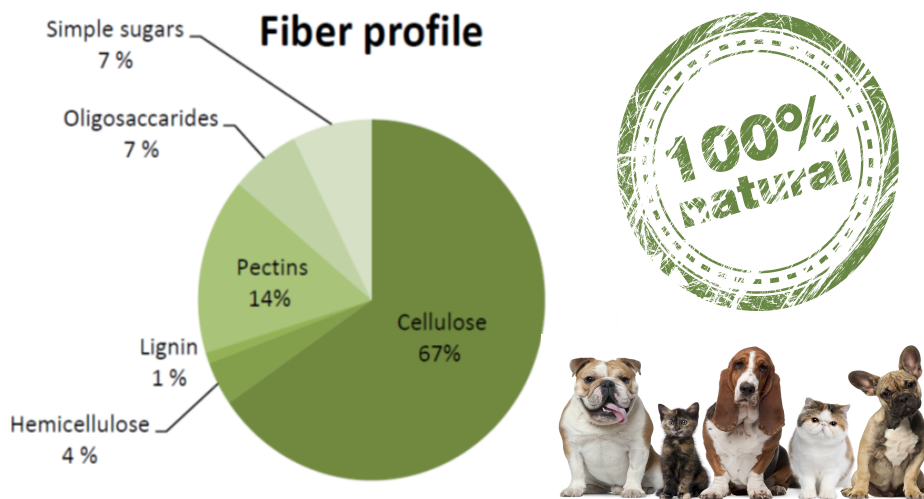


Fig.1. Chemical composition of AMN Pea Hull Fiber

Our experience in commercial Petfood formulations, indicates that AMN PHF can be used at levels of 2-5% in complete dry recipes for dogs, depending on the nutritional requirements of dietary fiber.

Key features

All natural and sustainable

Clean label

Non GMO

Excellent source of dietary fiber

Rich in cellulose

Low fermentable

Low calory

Highly functional

Good mouth feel

Good bulking properties

Hair ball control

PHF can be used in partial replacement of beet pulp or other type of fibers such as carrot and tomato pomace, citrus pomace and rice bran, creating a balanced ratio of soluble and insoluble fibers and a balanced intestinal health

Pea hull fiber: a functional Petfood ingredient

"Pea fiber is a low allergenic ingredient, is gluten free and grain free. Titgemeyer et al. 1991, studied the fermentability of different vegetable fibers and found that citrus pectin, soy fiber, beet pulp were the most fermentable, while pea fiber and oat fiber had the lower values. The insoluble fraction confers a low glycemic index (GI), being Pea hull fiber apt to diabetic pets and those suffering from overweight".

Citation extracted from E C Titgemeyer et a., 1991 "Fermentability of various fiber sources by human fecal bacteria in vitro" , The American Journal of Clinical Nutrition, Volume 53, Issue 6, June 1991, Pages 14



PHF, important source of natural antioxidants

As presented at Petfood Forum Kansas 2018, Pea hull fiber is also an important source of polyphenolics compounds and natural antioxidants, being flavonoids and pro-anthocyanidins the most important compound found in this fraction.



PETFOOD FORUM 2018

April 23-25



Pea hull fiber, a source of health promoting compounds

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Background

In the last years, pea concentrates have consolidated their position as alternative protein, starch and fiber sources in Pet food formulation being consistent with the ongoing global Pet food trends on "natural", "healthy" and "sustainable" ingredients. Pea hull fiber (PHF) represents, indeed, an important source of dietary fiber in Pet food, but also represents a source of a number of bioactive compounds with potential health benefits such as polyphenols and bioflavonoids, as reported by Gil Martens et al. 2017. Thermal treatment of PHF is required for achieving food grade quality PHF and for use in certain feed and food applications in which processing temperature is insufficient for microbial inactivation.

Goals of the study

To test the effects of heat treatment on the functional and bioactive properties of pea hull fiber.

Experimental work

PHF samples native and thermically treated were evaluated by chemical, functional and microbiological analyses. Heat treatment consisted of 3 min exposure at 95°C in a temperature-monitored oven. All samples proceeded from similar batch, were grinded and presented similar particle size distribution. Phenolic compounds were assessed by mass spectrometry (LC-MS/MS).

Results

PHF, both native and heat treated, displayed similar characteristics in terms of chemical composition, swelling and water binding capacity as indicated in Table 1.

- Oil binding capacity was lower in the heated product.
- Microbiologic count (Enterobacteriaceae and molds) was significantly reduced after heat treatment (Table 2).
- Eleven known phenolic compounds were identified in the PHF extracts, showing the potential of the PHF as source of bioactive compounds (Fig. 2)

References

Laura Gil Martens *et al.* "Pea Hull Fibre: Novel and Sustainable Fibre with Important Health and Functional Properties". EC Nutrition 10.4 (2017): 139-148



Fig. 1. Pea hull fiber

Microbiological count	Native	Heat treated
Enterobacteriaceae, CFU/g	3400	140
Molds, 25°C, 7 days, CFU/g	200	100



Fig. 2. Total ion chromatograms (TIC) of pea hull fiber in negative ionization mode. Black = native, red = heat treated pea hull fiber.

Analysis, g/100g PHF	Native	Heat treated
Moisture	8,4	6,6
Protein	4,5	4,7
Fat	0,3	0,3
Ash	2,6	2,8
Dietary Fiber	80,0	81,2
Fiber, NDF	68,5	70
Water holding capacity, g H ₂ O/g PHF	4,48 ± 0,28	4,54 ± 0,28
Swelling capacity, ml H ₂ O/g PHF	3,13 ± 0,22	3,12 ± 0,13
Oil binding, g oil/g PHF	2,23 ± 0,08	2,03 ± 0,23



The natural and sustainable way

Updated: September 2019

AM Nutrition Pea Hull Fiber in Petfood (2)

Natural source of dietary fiber

Pea hull fiber is an important source of insoluble fiber and can be used in partial replacement of beet pulp in Petfood formulations.

There are two sources of dietary fibre in yellow peas: the outer fibre and the inner fibre. The first fraction consists of the seed coat and is known as pea hull fibre (PHF), while the second fraction corresponds to the cotyledon fibre. The outer fibre contains non-soluble polysaccharides, primarily cellulose, whereas the cotyledon fibre consists of polysaccharides including hemicelluloses and pectin, as well as cellulose.



Pea hull fiber, a healthy source of dietary fiber

Pea hull fiber (PHF) is a perfect source of dietary fiber in Petfood, having a low degree of fermentation, good bulking properties due to its important water-holding and oil-binding capacity. Recommended for hair ball control in cats.

Key features

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Non GMO

Excellent source of dietary fiber

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Pea fiber: a functional Pet food ingredient

With a label-friendly name, pea fiber offers an effective, reasonable alternative fiber source for companion animal diets.

By Dr. Greg Aldrich, published at Petfood Industry magazine,

Release date: 6. desember 2010

"Using pea fiber in petfoods is fairly straightforward. It is a white to cream colored, nearly odorless, free-flowing powder. Pea fiber is bland to the taste and does not affect palatability or over-ride normal signals to satiety in dogs (Butterwick et al., 1994). It mixes well with both dry and wet ingredients and has been used to bind water and fat, as well as serve as a thickener in wet food preparations. It is extremely low in fat (less than 0.25%) and high in crude fiber (pushing 35 to 40%). For this reason alone, it can be a significant contributor to lowering calorie content of "diet" Foods".



"In addition, because of its high insoluble fiber content, adding a meaningful amount of pea fiber to the diet has been shown to modulate the glycemic response in diabetic dogs (Graham et al., 1994; Maskell et al., 1994). Pea fiber ash content ranges from 2% to 3%, with potassium being the most significant single mineral and the content of magnesium sufficient enough to be a minor impediment when formulating a low calorie, low magnesium Cat Food"



Citations extracted from

www.petfoodindustry.com/Pea_fiber__a_functional_petfood_ingredient.html

Pea Hull Fibre: Novel and Sustainable Fibre with Important Health and Functional Properties

By Dr. Laura Gil Martens, Dr. Mari Mæland Nilsen and Dr. Fiona Provan

"Yellow peas (*Pisum sativum*) have historically been part of the human diet due to their wide availability, low cost and high nutritional value. Peas are important sources of high quality protein, starch, dietary fibre, minerals and vitamins. In addition, peas contain a wide range of phytochemicals with known bioactivity and potential health effects"

"Pea hull fibre (PHF) represents an important source of fibre and has been shown to exert various beneficial physiological effects in human health. Rich in dietary fibre and in bioactive components, such as polyphenols and iso-flavonoids, PHF is a valuable ingredient in the mitigation of a number of cardiovascular and chronic metabolic diseases, such as diabetes and metabolic syndrome, among others".

Citation extracted from Laura Gil Martens., et al. "Pea Hull Fibre: Novel and Sustainable Fibre with Important Health and Functional Properties". EC Nutrition 10.4 (2017): 139-148.



The natural and sustainable way

Updated: September 2019