



'Fast Food Horse' - Some Ingredients of Processed Horse Feeds

by Dr Deborah Carley, Thunderbrook Equestrian

[see The Feeding Stuffs (England) Regulations 2005 and National Statistics Pesticide Usage Survey Reports for more details]

Pelleting and Binding Aids

These are needed to bind the fine powders, dusts and hairs from the milling process into solid pellets, cubes or mixes. Common pelleting and binding aids include molasses, lignosulphonite (sulphite lie) and clays (bentonite, hydrated aluminium silicate). Molasses may be used up to 15% or more in some cheaper feeds. Molasses have very limited nutritional benefits – the main purpose being a cheap, sweet, binding agent for dust and fine particles. Sulphites are one of the nine most common food products causing severe adverse reactions in people with respiratory disease such as asthma, also causes hives. Sulphites are used also as a preservative and are harmful to the good bacteria in the gut. Clays used for pelleting in horse feeds are the same clays used for making cat litter, cement and adhesives. Clay may inhibit various nutrient absorption and binds non-selectively to bacteria, so it will remove the good bacteria as well as the bad from the gut.

Oatfeed

Oatfeed is not ground up whole oats. Oatfeed is a waste by-product from the milling industry. It is composed of 4:1 oat hulls (the very outer part of the grain) and the dust mainly consisting of oat hairs lying between the grain and the hull. Oat hull has a digestibility little better than that of oat straw. It has to be processed to bind the hulls and the dust together into pellets. In addition to seed treatment (to prevent bird, slug damage, etc) and ammonium nitrate fertilisers, oats grown in the UK receive on average 2 treatments of herbicide, 2 treatments of fungicide, 1 growth regulator and 1 insecticide spray. The grain may then be dusted with a pesticide in farm grain stores, followed by another possible spraying of pesticide in the commercial grain store. The fabric of stores is also sprayed with pesticides. Oatfeed is primarily the outer hull of the oat grain which has been in direct contact with these various treatments, and contains dust, dirt and mould spores. During the milling of oats to produce 'porridge oats' for human consumption, the naturally occurring mycotoxins present in the outer parts of the oat grain are concentrated into the waste by-product, which in the past was composted and returned to the ground as fertiliser. Nowadays, this waste by-product is termed oatfeed and can contain mycotoxins at levels up to 500 times greater than our 'porridge oats'. The legislation governing safe levels of mycotoxins in human food is not applicable for animal feeds – where only recommended levels are made and cannot be enforced. See the 'science pages' of our website for more details.

Wheatfeed, Wheat Middlings

Wheatfeed is not ground up whole wheat or wheat bran. This is the major milling waste by-product of flour, fed to horses in the UK. Wheatfeed is obtained from screened grains or dehusked spelt. It consists principally of fragments of the outer skins and particles of the grain, coarse middlings and fine middlings. It is processed (usually pelleted) to bind the fine particles together. In addition to seed treatment and ammonium nitrate fertilisers, wheat grown in the UK receives on average 3 treatments of fungicides, 3 herbicides, 2 growth regulators and 1 insecticide. The grain may then be dusted, sprayed or gassed with pesticides in farm grain stores, followed by another possible dust, gas or spray of pesticides in commercial grain storage. The fabric of the stores may also be sprayed with pesticides. Wheatfeed is primarily the outer parts of the wheat grain that have been in direct contact with these various treatments, and contain dust, dirt, mould spores and mycotoxins concentrated during the milling process, as for oatfeed above.

Grain Screenings

The fine particles and dust generated as a waste product from grain milling. Pesticide usage as above.

Nutritionally Improved Straw

Sounds good but what exactly is this? Straw treated with sodium hydroxide to break down the structural fibre (lignins) and increase its digestibility. Sodium hydroxide is otherwise known as caustic soda. It is principally used in the paper making industry, manufacturing of soaps, detergents and as a drain cleaner. It is the most common ingredient in oven cleaners. Clearly, sodium hydroxide is not beneficial for good bacteria in the gut. Pesticide usage as above depending on if it is wheat, oat or barley straw.

Molassed and Unmolassed Sugar Beet

This is the waste by-product of the manufacture of sugar comprising dried sugar-beet pulp, to which molasses have been added back. Unmolassed sugar beet is not sugar free – it contains approx 5% residual sugar in the pulp. In addition to ammonium nitrate fertilisers, sugar beet crops in the UK receive on average 5 herbicide sprays, 1 fungicide and 1 insecticide spray. The sugar beet pellets are derived from the residual pulp remaining in the vats once the sugar syrup has been extracted for human consumption.

Molasses

Molasses are the by-product consisting of the syrupy residue collected during the manufacture or refining of beet or cane sugar. It has very little nutritional value, but a high glycemic response (ie quickly convert to blood sugar and subsequent insulin response).

Vegetable Oils

Soy, corn and sunflower oil are used to coat various fibrous chaffs (alfalfa, straw, hay chaff) to decrease dust levels, and increase energy levels of low-starch feeds. These oils are high in the inflammatory omega-6 polyunsaturates and low in omega-3 polyunsaturates and monounsaturates. This imbalance in essential fatty acids leads to inflammatory responses, increased insulin resistance, and other metabolism problems which are not helpful for a horse already suffering from laminitis or a metabolic syndrome. For more information see the scientific pages on our website. These vegetable oils are often found at high levels in feeds sold specifically for laminitic horses. Fats and oils cooked at high temperature (some cubes and pellets) can permanently change shape, structure and become 'trans fats', which again impact adversely on healthy metabolism. Many vegetable fats are mass produced for the bio-diesel market, from specially cultured strains of genetically modified crops.

Cooked Soya Bean, HiPro Soya, Soya Hulls

Soya in theory is an excellent protein source. It's a relatively cheap protein to produce and hence is now a very popular ingredient in feeds. Raw soya beans contain allergenic, goitrogenic and anticoagulant factors in addition to protease inhibitors. Many people are allergic to soya products which accordingly are labelled in human foods. To avoid these anti-nutrients, Asian cultures traditionally fermented soya (soy sauce, natto, miso, tempeh) or sprouted the beans. Asian people have been fermenting soya for thousands of years before it became a protein ingredient in most western diets, yet the traditional average consumption per person per day of fermented soya in Japan is only 2 teaspoons. The western culture is to eat in large quantities after cooking (toast, micronize or other heat process) and not all of these anti-nutrients are lost. For laminitic and metabolic compromised horses, the goitrogenic activity of legumes may act as a thyroid inhibitor. The majority of the world's soya production is from genetically modified crops (a bacterial gene conferring resistance to the active ingredient in Roundup herbicide is genetically cloned into the plant). Hundreds of thousands of acres of rainforest have been destroyed to make way for GM soya plantations, being sprayed with Roundup herbicide. Glyphosate (the active ingredient) is an endocrine disruptor – ie it can disrupt normal metabolism. Published research also shows that feeding GM corn has adverse effects on mammalian health, including liver, kidney and metabolism.

Alfalfa / Lucerne

High fibre, higher calcium and good protein levels, although these are not as bioavailable or well balanced as other better quality protein sources. Alfalfa is a legume (it is not a grass/cereal) and again it contains goitrogens which are not helpful for the metabolic compromised horse. It also contains phytochemicals which in some horses appear to trigger photosensitivity and skin reactions. Why feed expensive fibre in the feed bowl, when you have good quality fibre in your haynet?

Locust Beans

Bean pods from a West African tree containing approx 30% sucrose (sugar).

Biscuit Meal / Peanut Meal

Bakery wastes including wheat flour, fats, oils, sugar, salt, emulsifiers, etc. Rancidity and moulding are typical problems so preservatives and antioxidants are used to stabilise. Contamination with chocolate products can cause problems for those competing under the Rules of Racing and Competition. Peanut meal is the waste by-product from the processing of peanuts (outer husks, dust, etc).

L-lysine

An essential amino acid for horses, and usually added when good quality, well balanced protein is low.

Vitamin & Mineral Premix

Chemically synthesised vitamins and a cheap source of inorganic minerals, ready made and pelleted and bought in by the feed mills to add to their different mixes. Man-made vitamins are not always the same as natural plant sourced vitamins. Many natural vitamins are 'stereoisomers' with a structure of one particular enantiomer, whilst man-made vitamins may contain both enantiomers. What does this mean? Think of your hands – left hand and right hand. They look the same but they are not. You cannot fit your right hand in your left-hand glove. They are mirror images of each other. Natural vitamins are often made by plants as one type of handedness, not both, because only the one type can be used effectively in natural metabolic reactions. The wrong 'handed' man made vitamin cannot take part in healthy metabolic reactions.

Most natural plant derived minerals have an organic chemical structure. Again, this is very different to the inorganic chemical structure of many cheaper minerals (see details below).

Magnesium Oxide / Magnesium Sulphate – also in 'calmer supplements'

Cheaper, inorganic forms of magnesium. Not as bioavailable as organic or chelated forms of magnesium which are found naturally in plants. (Magnesium is the metal ion found in chlorophyll in plants, similar to iron is found in haemoglobin in animals). Magnesium sulphate is otherwise known as Epsom Salts and is often used as a purgative. Again, a cheap but poorly digested and absorbed form of magnesium that can cause diarrhoea. Magnesium supplements are all the fashion today, many consisting of pure inorganic salts. Beware that over supplementing with these products can affect the overall mineral balance, leading to symptoms such as diarrhoea, osteoporosis, or calcium deposits depending upon which minerals are imbalanced. Correct mineral balance is very important for correct biochemistry and metabolism in each and every cell in the horse's body.

Copper Sulphate

A cheap inorganic source of copper. This blue chemical is used to kill thrush in horse's feet, reduce algal blooms in ponds, etc. This chemical is not beneficial for good gut bacteria and can irritate the gut.

Zinc Sulphate, Potassium Sulphate, Manganese Sulphate, Ferrous Sulphate, Ferrous Oxide

Cheap inorganic sulphates which are not very bioavailable. It is better to use more natural organic or chelated forms of these minerals, as found in plants and vegetable matter. For example, ferrous oxide is another name for rust.

Preservatives

Strong chemical preservatives are needed to stabilise the by-products and refined oils in processed feeds, to prevent them going rancid. Chemically synthesised preservatives and antioxidants may compromise the good bacteria in the gut. Some are extremely toxic to animals at higher levels.

High Temperature Processing

Many pellets and nuts are processed at high temperatures as part of the extrusion process (temperatures as high as cooking in a chip pan). This can permanently change the chemical structure of essential fatty acids, amino acids, leading to 'trans' fats, etc. Trans fats are unable to take part in healthy cellular metabolic reactions – that's why many human foodstuffs are now labelled as 'trans fat free'.

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