

ANIMAL FEEDSTUFFS CONTAINING SWEETENING COMPOSITIONS

The present invention is concerned with improvements in or relating to animal feedstuffs containing sweetening compositions. The invention is particularly directed to animal feedstuffs for consumption by pigs, cattle and sheep.

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In order to make animal feedstuffs attractive to animals, and thereby increase the nutrient intake of the animals' diet to the highest possible level, it has been proposed to incorporate sweetening compositions therein in order to
10 encourage the animal to eat.

The following discussion is in relation to animal eating habits and is described in relation to pigs; however, similar considerations apply to other animals particularly
15 cattle and sheep.

After the nutrient density of young pig diets has been increased to the highest possible level, within the required economic constraints, feed intake is the major limiting factor
20 on nutrient intake. If this can be increased, even by small amounts, there is an immediate, cost effective response in terms of Feed Conversion Ratio and Daily Live Weight Gain. This is due to the fact that the young hybrid pig has a larger capacity for growth than its appetite will allow, because of
25 the small size of its stomach.

Feed intake can be affected by many factors such as:-
pellet size, pellet hardness, freshness of feed, feeding
30 method, feeding environment, palatability of individual ingredients and use of palatability and sweetening agents.

It has been proposed to utilise sucrose (sugar) as the sweetener to be added to the animal feedstuff. However, up to the age of approximately three weeks, the young pigs' digestion system has not developed sufficiently for it to digest sucrose. As a result thereof, it has been proposed to utilise synthetic sweeteners in place of the sucrose. In this regard, the most commonly used synthetic sweetener is saccharin. As used throughout the specification and claims, "saccharin" is intended to mean saccharin itself as well as its salts, particularly its sodium salt.

In theory, it is possible to add saccharin as a sweetening agent to a feedstuff for baby pigs as well as for growing pigs, to produce a sweetness which will encourage the animal to eat. However, in practice, there is a limit to the amount of saccharin that may be added due to the bitter, metallic aftertaste saccharin imparts to the feedstuff. This aftertaste will cause the feedstuff to be rejected.

Natural protein sweeteners, e.g. thaumatin and monellin, have also been proposed as sweetening agents since they are many times sweeter than sucrose. However, such protein sweeteners have not been utilised from an economic point of view because of their costs compared with that of saccharin.

We have now surprisingly discovered that if a protein sweetener is added to saccharin in an amount less than that required to produce sweetness, then it masks the bitter, metallic aftertaste of the saccharin. As a result thereof, much higher levels of saccharin can be used than was previously possible due to the masking effect of the protein sweetener.

According to the present invention there is provided an animal feedstuff including a sweetening composition comprising saccharin and a protein sweetener, the protein sweetener masking the bitter, metallic after-taste of the saccharin and being present at a level of up to 0.8 ppm in the animal feedstuff.

The protein sweetener is preferably present in an amount of 0.05 - 0.4 ppm, further preferably 0.05 to 0.2 ppm, in the animal feedstuff.

The animal feedstuff containing such sweetening composition may also include other high intensity sweeteners and flavouring materials.

It can thus be seen that the invention enables blends of high intensity sweeteners, for example Acesulfame-K, Aspartame, Stevioside and ammonium glycyrrhizinate, together with flavouring materials and a protein sweetener, particularly thaumatin, to be formulated to produce flavoured, high intensity sweeteners without the bitter after-taste of saccharin. The protein sweetener is used at levels where its sweetness contribution is greatly overpowered by that of the other high intensity sweeteners.

The formulation of the sweetening composition can be as desired by suitably altering the integers thereof. Typical formulations in accordance with the invention are:-

	%	%	%
Acesulfame-K	4.60	3.50	-
Sodium Saccharin	27.80	31.00	21.00
Dextrose Monohydrate	57.36	33.77	-
Aspartame	-	-	2.00
5 Whey Powder	-	28.00	67.22
Precipitated Silica	5.60	2.70	2.90
Flavouring	4.60	1.00	6.80
Thaumatococcus	0.04	0.03	0.08
10	100.00	100.00	100.00

The unexpectedly discovered principle that if protein sweeteners are used at a level below that which is required to produce sweetness, then the bitter, metallic aftertaste of saccharin is masked and enables animal feedstuffs to be provided which are attractive to animals.

CLAIMS

1. An animal feedstuff including a sweetening composition comprising saccharin and a protein sweetener, the protein sweetener masking the bitter, metallic after-taste of the saccharin and being present at a level of up to 0.8 ppm in the animal feedstuff.
2. An animal feedstuff as claimed in claim 1, in which the protein sweetener is thaumatin or monellin.
3. An animal feedstuff as claimed in claim 1 or 2, in which the composition additionally includes other high intensity sweeteners and/or flavourings.
4. An animal feedstuff as claimed in claim 3, in which the additional high intensity sweeteners are Acesulfame-K, Aspartame, Stevioside and/or ammonium glycyrrhizinate.
5. An animal feedstuff as claimed in any preceeding claim, in which the protein sweetener is present in an amount of from 0.05 to 0.4 ppm in the animal feedstuff.

