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METHOD OF MAKING ANIMAL FOOD

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2 Claims. (Cl. 99—2)

This application is a continuation in part of co-pending application Ser. No. 843,343, filed Sept. 30, 1959, now abandoned.

This invention relates to a novel food for animals and to a method of making the same. More specifically, it relates to a novel dog food particularly characterized by its ready hydratability and its retention of particle identity during and after hydration.

As is well known to those skilled in the art, animal foods and particularly dog foods are commonly prepared for the consumer in two forms: the meal type particularly characterized by its dry cereal-like texture and by its low moisture content, typically about 10%; and the canned type particularly characterized by its meat-like texture and by its high moisture content, typically as high as 75%.

Although the canned type of dog food generally has a very high degree of palatability or receptivity by dogs, it is characterized by poor storage characteristics and comparatively low nutritional value. On the other hand, the meal type animal food, while eminently superior with respect to these characteristics, is commonly found to possess low palatability. In many cases, the animal will not eat it in dry form and it becomes necessary to add liquids thereto.

Although prior art meal type foods may be readily enough moistened, they commonly become mushy or doughy and stick to the plate. A food which possesses these characteristics is not palatable to most animals and they may not consume enough of such food to provide the proper nutritional intake. Thus, because of the undesirable physical properties of such foods, their superior nutritional features are not made available to the animal.

It is an object of this invention to prepare a novel type animal food characterized by a very high degree of palatability, a high nutritional content, ready hydratability, and retention of particulate character on hydration.

This invention relates to a method of preparing a hydratable animal food characterized by the above properties, said method comprising conditioning a mixture of farinaceous grain and proteinaceous meal in a ratio of 10:1 to 1:1 to 25%–30% moisture; heating said mixture at a product temperature of 190°–325° F. for 3–40 minutes to cause incipient pyrolysis throughout said mixture, said incipient pyrolysis being characterized by substantial dextrinization and caramelization of the starch in said farinaceous grain, a Maillard Reaction between the carbohydrate in said grain and the protein in said protein meal, and some decomposition of organic substances in the mixture; and terminating said incipient pyrolysis before complete pyrolysis occurs by quenching the product to below the pyrolysis temperature.

In accordance with a more specific aspect of this invention, the hydratable product may be prepared by conditioning a charge mixture comprising a farinaceous grain such as corn and proteinaceous meal to 25% to 30% moisture, forming the mixture into particles, and heat treating the particles at less than 325° F. Preferably the heat treating may be effected in two stages: in the first

stage, the moisture content may be rapidly lowered to 3–10% moisture, say 3–5%, while keeping the product temperature at below 190° F. In the second or holding stage, wherein incipient pyrolysis occurs, the particles may be heat treated for a longer period of time at product temperature of 190°–290° F. to give a final product having a moisture content which may be substantially anhydrous. The product is quenched during incipient pyrolysis to below 125° F. to terminate the pyrolysis and prevent the product from becoming completely decomposed.

The farinaceous charge materials which may be employed include wheat, barley, oats, etc. and their derivatives, including, e.g., wheat middlings or wheat germ. The preferred farinaceous grain charge material may be corn, preferably in the dry state, and including whole corn, corn meal, corn germ meal, corn bran, etc. Although the entire content of the mixture may be derived solely from whole corn or corn meal, it is preferred to use a mixture of corn meal, corn bran, and corn germ meal.

The proteinaceous meal which may be a component of the product of this invention will preferably be soy bean meal, meat meal, or fish meal, and in the preferred embodiment it may be a mixture of soy bean meal and meat meal, preferably in about equal proportions.

In the preferred embodiment, the ratio of farinaceous charge, e.g., corn to proteinaceous meal may vary from 3:1 to 1:1, commonly 1.5:1. In one embodiment the ratio was desirably maintained at about 45:32. The farinaceous charge and proteinaceous meal together may comprise from 50% to 95%, say 90% of the total mixture.

Other preferred ingredients in the product include: desired flavors in the form of, e.g., fish meal (when fish is not used as the proteinaceous meal), salt, fat, etc., typically present in amount of 0.25% to 6%, say 5.5% of the total weight; fibrous components typified by beet pulp, preferably present in amount of 0.25% to 2%, say 1%; and desired vitamins, minerals, etc., sufficient to complete the nutritive balance of the product.

A typical specific embodiment of the product may be prepared from the following ingredients:

	Percent
Farinaceous charge (in the form of an equi-part mixture of corn germ meal, corn bran, corn meal, and wheat middlings)	58
Proteinaceous meal (in the form of an equi-part mixture of soy bean meal and meat meal)	32
Wheat germ	3
Fish meal	3
Alfalfa	0.5
Beet pulp	1
Salt	0.5
Fat	2
Vitamins, minerals, etc., q.s.	

In accordance with this invention the mixture of charge materials may be conditioned to a moisture content from its initial content of 8% to 12%, say 10% to a higher level, typically 25%–30%, say 27%–30%. This may be affected by addition of appropriate amounts of cold water, warm water, hot water, or steam to the mixture. When cold water is employed it will be desirable to raise the moisture content to fall within the lower portion of the range, i.e., to 25%–27%.

In one embodiment of the invention, conditioning may be effected by addition of cold water to the mixture in a closed paddle mixer (e.g., of the Beale tube type). Preferably the amount of cold water added will be sufficient to raise the moisture content to 25%–30%. In this em-