PET FOOD COMPOSITION HAVING ENHANCED PALATABILITY

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ABSTRACT

A food composition is provided for a companion animal such as a dog or cat, the food composition comprising an extract of a herb or spice that comprises at least one compound selected from thymol and carvacrol as a substantial flavorful ingredient. A method is provided for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of an extract of a herb or spice that comprises at least one compound selected from thymol and carvacrol as a substantial flavorful ingredient. A suitable extract is essential oil of oregano.
PET FOOD COMPOSITION HAVING ENHANCED PALATABILITY

[0001] This application claims priority of U.S. provisional patent application Ser. No. 60/525,306, filed Nov. 26, 2003, which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to pet food compositions having enhanced palatability and to methods of enhancing palatability of a pet food.

BACKGROUND OF THE INVENTION

[0003] In designing foods for companion animals such as cats and dogs, optimal animal health or wellness through good nutrition is an important goal. However, even the most nutritious animal food is of little value if the animal rejects or refuses to eat the food, or if the animal’s intake of the food is restricted, because it finds the food unpalatable.

[0004] Finicky animals, older animals, sick animals, and high energy animals often do not consume enough nutrients to maintain their weight and activity level. Particularly in the case of older animals and sick animals, lack of interest in food and resulting low consumption can result in muscle deterioration, weakness and poor recovery of health, ultimately resulting in hospitalization and/or death of the animal.

[0005] Cats in particular are notoriously finicky, fastidious or otherwise excessively selective in what they will eat.

[0006] Enticing a companion animal to eat can be an expensive and time consuming chore. Foods with varying moisture content, supplements and treats have been developed to encourage animals to eat, however these attempts are an imperfect solution to the problem.

[0007] U.S. Patent Application Publication No. 2003/019343 discloses use of a mixture of natural herbs and spices as a palatability improving agent. Examples given therein of natural herbs and spices for use in such a mixture include allspice, anise, basil, bay, black pepper, caraway, cardamom, cassia, celery seed, cinnamon, clover, coriander, cumin, dill, fennel, ginger, marjoram, mustard, nutmeg, oregano, paprika, rosemary, saffron, sage, savory, tarragon, thyme, turmeric and white pepper.

[0008] U.S. Pat. No. 4,514,431 discloses meat-flavored products including cat and dog foods. A recipe is given for a ground sausage mixture containing, inter alia, oils of black pepper, celery, cloves, coriander, cumino, ginger, mustard, nutmeg and pimento berries, as well as oleoresin capsicum.

[0009] European Patent No. 1 063 897 discloses a dual texture pet or animal food that can comprise ingredients such as rosemary, clove and parsley seed oils.

[0010] U.S. Pat. No. 6,156,355 discloses various pet food formulations that comprise certain extracts or oils of herbs and spices, including for example rosemary extract, Yucca schidigera extract, parsley seed oil powder and ginger extract.

[0011] U.S. Pat. No. 6,106,838 discloses a pharmaceutical composition comprising an essential oil that comprises thymol and carvacrol, for example an essential oil of Origanum species, reportedly useful as an antimicrobial.

SUMMARY OF THE INVENTION

[0012] This invention is directed to animal foods having enhanced palatability and to methods for enhancing palatability of animal foods. It is contemplated that such compositions and methods can be useful in relation to a wide range of non-human animals, but more particularly companion animals such as cats and dogs.

[0013] In one embodiment, there is provided a food composition for a companion animal, the food composition comprising an extract of a herb or spice that comprises at least one compound having the formula

[0014] as a substantial flavorant ingredient. The extract is present in the food composition in an amount equivalent, in content of compounds of the above formula, to at least about 1 ppm by weight of essential oil of oregano.

[0015] It will be seen that the above formula embraces thymol (5-methyl-2-isopropylphenol) and carvacrol (2-methyl-5-isopropylphenol).

[0016] In another embodiment, there is provided a food composition for a companion animal, the food composition comprising an extract of a herb or spice of the botanical family Verbenaceae, said extract being present in the food composition in an amount equivalent, in flavorant effect, to at least about 1 ppm by weight of essential oil of oregano.

[0017] In a further embodiment of the invention, there is provided a method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of an extract of a herb or spice that comprises at least one compound having the formula

[0018] as a substantial flavorant ingredient. The extract is added to the food composition in an amount equivalent, in content of compounds of the above formula, to at least about 1 ppm by weight of essential oil of oregano.

[0019] In a still further embodiment of the invention, there is provided a method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective
amount of an extract of a herb or spice of the botanical family Verbenaceae (herein a “verbenaceous extract”). The extract is added to the food composition in an amount equivalent, in flavorful effect, to at least about 1 ppm by weight of essential oil of oregano. Throughout this specification where essential oil of oregano is indicated, it will be clear to one skilled in the art that any verbenaceous extract, or any herb or spice extract that comprises thymol and/or carvacrol in a substantial flavorful amount, can be substituted, including but not limited to essential oils, oleoresins, infusions, tinctures and natural extractives, including distillates.

[0020] A pet food composition comprising an extract as defined herein can exhibit surprisingly high palatability to a companion animal; furthermore practice of the method as described herein can impart surprisingly high palatability to a pet food that otherwise is of inferior palatability to a companion animal.

[0021] Additional or alternative advantages and benefits of the composition and method of the present invention will be apparent to one skilled in the art from reading this specification.

DETAILED DESCRIPTION

[0022] The terms “herb” and “spice” as descriptors of plant species or parts of plants are not clearly differentiated in the art and have overlapping meanings. These terms are used interchangeably herein.

[0023] An “extract” herein is a preparation made from any part or parts of a herb or spice that comprises, generally in concentrated form, compounds that contribute to the characteristic flavor and/or aroma of the herb or spice. Extracts include without limitation essential oils, oleoresins, infusions, tinctures and natural extractives, including distillates. Extracts do not include crude plant parts, whether whole or ground. It is contemplated that considerable advantages are obtainable by use of an extract as provided herein, rather than by use of the corresponding herb or spice in crude form as proposed, for example, in above-cited U.S. Patent Application Publication No. 2003/019343. Such advantages can include greater standardization and/or uniformity of flavorful effect, lower cost, improved cost stability, greater ease of processing, etc.

[0024] A “flavorant” compound or ingredient herein is a compound or ingredient that, when it occurs naturally in a plant part, contributes to the characteristic flavor and/or aroma of the plant part, and/or, when extracted from a plant or synthesized, has a distinctive flavor that it imparts to a composition comprising that compound or ingredient. A “substantial flavorant ingredient” of a herb or spice or an extract thereof is a flavorant ingredient present in sufficient amount to have an organoleptically detectable effect on the flavor and/or aroma of the herb or spice or extract thereof. Typically, such an ingredient is present in an amount of at least about 1%, more typically at least about 5%, by weight of an essential oil of the herb or spice.

[0025] “Enhanced” palatability of a food composition comprising a herb or spice extract herein will be understood to be by comparison with an otherwise similar food composition lacking only the herb or spice extract.

[0026] Essential oil of oregano, which can contain up to 70% by weight or more of thymol and carvacrol, is the standard herein. Where essential oil of oregano is used in a food composition, the amount used should be at least about 1 ppm by weight. Where a herb or spice extract other than essential oil of oregano is used, the amount used should be an amount equivalent to 1 ppm of essential oil of oregano, in content of thymol and carvacrol or in palatable effect. An essential oil of oregano equivalent amount of any such extract can readily be determined by one of ordinary skill in the art based on the disclosure herein.

[0027] The name “oregano” is a general term applying to a herb having a particular flavor, rather than to a particular species of plant. See Fenoroli’s “Handbook of Flavor Ingredients, Vol. 1,” 3rd ed. (1995), CRC Press, at p. 210. Accordingly, essential oil or other extract of oregano for purposes of the present invention can be derived from any oregano-flavored herb, including Lippia graveolens of the family Verbenaceae (also known as Mexican oregano), Origanum species including O. vulgare (also known as wild marjoram), O. viride and O. virens, Coleus amboinica and Thymus martichina of the family Labiatae.

[0028] In one embodiment, the food composition comprises an oil of oregano equivalent amount of at least about 1 ppm of a herb or spice extract comprising at least one of thymol and carvacrol.

[0029] In one embodiment the extract comprises thymol. In another embodiment the extract comprises carvacrol.

[0030] Both thymol and carvacrol can be present, at any weight ratio, for example a weight ratio of about 1:1 to about 10:1. Such an extract can be derived from an oregano-flavored herb as described above, or from any other thymol- and/or carvacrol-containing herb or spice. Non-limiting examples of such herbs or spices other than those listed above include basil (Ocimum species, particularly O. gratissimum); dittany of Crete, also known as Spanish hops (Origanum dictammus); horsemint, also known as wild bergamot (Monarda punctata), and other Monarda species; savory (Satureia species including S. hortensis and S. montana); thyme (Thymus species including T. vulgare, T. serpyllum, T. zygis and T. capitatus); and the fruits of Schinus molle.

[0031] Illustrative examples of extracts useful according to this embodiment include the essential oils of oregano and thyme.

[0032] In another embodiment, the food composition comprises an oil of oregano equivalent amount of at least about 1 ppm of a verbenaceous extract such as those obtained from Lippia species such as L. graveolens (Mexican oregano) or L. citriodora (lemon verbena), or from Verbena officinalis (vervain).

[0033] In yet another embodiment, the food composition comprises an extract, for example an essential oil, of a herb or spice selected from the group consisting of anise, arnica, basil, bergamot, calendula, caraway, chamomile, cinnamon, citrus (including lemon), elder, eucalyptus, fir needle, garlic, hops, juniper, lavender, lemon balm, licorice, marjoram, oregano, passionflower, peppermint, primrose, thyme and vanilla. More particularly, the extract is derived from cinnamon, citrus (including lemon), eucalyptus, lavender, oregano, peppermint, thyme or vanilla. Compositions of this embodiment, when fed to companion animals, can be beneficial in reducing odor of excreta, including stool odor and flatulence odor.
Contemplated food compositions include, for example, canned moist pet foods, extruded dry pet foods, supplements and treats. All are adapted for consumption by a companion animal such as a dog or cat, but are not necessarily suitable for human consumption. In one embodiment the food composition, by virtue of the quality or origin of the ingredients or means of processing, is not adapted for human consumption. Any pet food can benefit from inclusion of a herb or spice extract as defined herein, but in one embodiment the pet food is one having a major (at least about 25%), for example at least about 50%, by weight) component derived from animal (e.g., mammal, bird or fish) proteinaeous tissues including muscle tissues and offal, optionally with a carbohydrate source such as cereal grains.

The herb or spice extract can be distributed more or less homogeneously through the food composition. Alternatively, the herb or spice extract can be present in whole or in part on surfaces of food pieces such as meat chunks, dry kibbles or individual treats such as dog biscuits.

The herb or spice extract should be present in an amount that is not toxic or otherwise deleterious to the health of a companion animal consuming a normal quantity of the food composition. In particular, the extract should be present at a concentration that does not cause undesirable effects on digestion, particularly long-term effects lasting several days or longer. Undesirable effects on digestion can include, for example, constipation or diarrhea.

Suitable amounts of a herb or spice extract as provided herein will normally be found in a range of about 1 to about 1000 ppm, for example about 5 to about 100 ppm, or about 10 to about 50 ppm, expressed as essential oil of oregano equivalent. Where the extract is localized on surfaces of food pieces, local concentrations can exceed those suggested here, but the overall concentration in the food composition as a whole will generally be in a range as stated above.

In preparing a composition of the present invention, the components of the food composition are adjusted so that the herb or spice extract is present in the composition at a desired concentration. The herb or spice extract can, for example, be incorporated into the food composition during formulation, such as during and/or after mixing of other components of the composition. Distribution of these components into the composition can be accomplished by any conventional method including standard mixing procedures.

Food compositions of the present invention can be prepared in a wet or containerized (e.g., canned) form using conventional pet food processes. In one contemplated embodiment, ground animal (e.g., mammal, poultry and/or fish) proteinaeous tissues are mixed with other ingredients, including for example animal fats and vegetable oils, cereal grains, other nutritionally balancing ingredients, special purpose additives (e.g., vitamin and mineral mixtures, inorganic salts, cellulose and beet pulp, bulking agents, and the like); and water sufficient for processing is also added. These ingredients typically are mixed in a vessel suitable for heating while blending the components. Heating of the mixture can be effected in any suitable manner, such as, for example, by direct steam injection or by using a vessel fitted with a heat exchanger. Following addition of the last of these ingredients, the mixture is heated in a pre-cooking step to a temperature of up to about 100°C. Higher temperatures can be acceptable, but can be commercially impractical without use of other processing aids. When heated to the appropriate temperature, the material is typically in the form of a thick liquid. The thick liquid is filled into suitable containers such as cans, jars, pouches or the like. A lid is applied, and the container is hermetically sealed. The sealed containers are then placed into conventional equipment designed to sterilize the contents. This is usually accomplished by heating to a temperature of at least about 110°C for an appropriate time, which is dependent on, for example, the temperature used and the composition. Products can also be prepared by an aseptic process wherein the contents are heated to commercial sterility before being packaged in sterilized containers.

The herb or spice extract can be added to containerized pet food products before, during or after the pre-cooking step.

Food compositions of the present invention can be prepared in a dry form using conventional processes. In one contemplated embodiment, dry ingredients, including, for example, animal protein sources, plant protein sources, grains, etc., are ground and mixed together. Moist or liquid ingredients, including fats, oils, animal protein sources, water, etc., are then added to and mixed with the dry mix. The mixture is then processed into kibbles or similar dry pieces. Kibble is often formed using an extrusion process in which the mixture of dry and wet ingredients is subjected to mechanical work at a high pressure and temperature, and forced through small openings and cut off into kibble by a rotating knife. The wet kibble is then dried and optionally coated with one or more topical coatings which can include, for example, flavors, fats, oils, powders, and the like. Kibble also can be made from the dough using a baking process, rather than extrusion, wherein the dough is placed into a mold before dry-heat processing. Kibble also can be made from a food matrix undergoing pelletization.

It is important to note that the herb or spice extract can be incorporated into the food composition by addition to the above-described mixtures before extrusion or by coating extruded kibble or pellets with the herb or spice extract as an ingredient of a topical coating. For example, an essential oil can be added to liquids in a dry processing line, to a pre-conditioner composition or to a coating composition.

In one embodiment, the food composition is a nutritional supplement comprising a herb or spice extract as defined herein. Supplements include, for example, a pet food used with another pet food to improve the nutritive balance or performance of the total. Contemplated supplements include compositions that are fed undiluted as a supplement to other pet foods, offered free choice with other parts of an animal’s ration that are separately available, or diluted and mixed with an animal’s regular food to produce a complete diet. The AAFCO, for example, provides a discussion relating to supplements in the American Feed Control Officials, Inc. Official Publication (2003), at p. 220. Supplements can be in various forms including, for example, powders, liquids, syrups, pills, encapsulated compositions, etc.

In another embodiment, the composition is a dog or cat treat comprising the herb or spice extract. Treats include, for example, compositions that are given to an animal to entice the animal to eat during a non-meal time. Contemplated treats for canines include dog biscuits, for example in
the shape of dog bones. Treats can be nutritional, wherein the composition comprises one or more nutrients, and can, for example, have a composition as described above for a pet food. Non-nutritional treats encompass any other treats that are non-toxic. The herb or spice extract can be present in a coating on the surface of the treat, or incorporated into the treat, or both.

[0045] A herb or spice extract can, if desired, be encapsulated in pet food systems. A herb or spice extract can be added to a palatant (such as a digest or broth) at any time during processing of the palatant.

[0046] A further embodiment of the invention is a method for enhancing the palatability to a companion animal of a food composition, the method comprising adding to the food composition a palatability enhancing effective amount of a herb or spice extract as described hereinabove.

[0047] Palatability enhancement can be measured by any procedure known in the art, but in an illustrative procedure enhanced palatability can be quantified by determining an intake ratio in a palatability test. In one type of test, illustratively presented in Example 1, a test formulation (for example a food composition of the present invention) is offered together with a control or comparator formulation (for example a food composition lacking a herb or spice extract as described herein) for a predetermined duration. A suitable duration is about 45 minutes for a dog or 24 hours for a cat, but this can be varied if desired. The weight ratio of test food consumed to total food (test food plus control food) consumed during that period is a measure of intake ratio and of relative palatability of the two foods. An intake ratio substantially greater than about 0.5 is indicative of enhanced palatability.

[0048] The herb or spice extract can be added during manufacturing of the food composition, for example by a process of mixing or coating as indicated above. In one embodiment, the herb or spice extract is added to a companion animal’s food by the person responsible for feeding the companion animal.

[0049] For this purpose, the herb or spice extract can be used as such, for example as an unilluted essential oil. Typically, however, it is more convenient, and reduces risk of accidental over-addition of the extract, to provide the extract in diluted or dispersed form in a suitable carrier such as vegetable oil or edible powder. A powder comprising the herb or spice extract can be sprinkled on an animal’s food immediately before feeding. Alternatively, a liquid comprising the herb or spice extract can be sprayed on the food. Such powder or liquid compositions are described herein as “palatability enhancer compositions” and can be thought of as “seasonings”. They can be applied to the top of a serving of pet food and/or can, if desired, be mixed into the food. The use of palatability enhancer compositions or seasonings comprising a herb or spice extract as specified herein to enhance palatability of a pet food composition is an embodiment of the present invention.

[0050] A palatability enhancer composition or seasoning as described above can be purchased by a pet owner independently of the pet food to which it is to be added; alternatively, such a palatability enhancer composition or seasoning can be purchased together with the pet food in the form of a kit, for example a co-packaged kit. Such a kit can further include a label or package insert providing guidance or instructions as to suitable amounts of the seasoning to be added to the food composition.

[0051] A palatability enhancing effective amount of the herb or spice extract will generally be found in a range as provided above, for example about 1 to about 1000 ppm, or about 5 to about 100 ppm, or about 10 to about 50 ppm, by weight of the food composition to which the herb or spice extract is to be added.

[0052] In a further embodiment, a method is provided for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of at least one compound having the formula

![Formula Image]

[0053] The at least one compound of the above formula can be thymol or carvacrol. Optionally both thymol and carvacrol can be added according to the method of the invention. The compound of the above formula can be of natural or synthetic origin.

[0054] According to this embodiment, the at least one compound of the above formula can be added to the food composition in any palatability enhancing effective amount that is not toxic or otherwise deleterious to the health of the animal, for example an amount of about 1 to about 1000 ppm, or about 5 to about 100 ppm, or about 10 to about 50 ppm, by weight of the food composition.

[0055] It is contemplated that the methods of this invention can be useful to enhance palatability for a variety of animals, including non-human animals such as non-human primates (e.g., monkeys, chimpanzees, etc.), companion animals (e.g., dogs, cats, horses, etc.), farm animals (e.g., goats, sheep, swine, cattle, etc.), laboratory animals (e.g., mice, rats, etc.), birds (e.g., domestic birds such as canaries, parrots, etc. and commercial birds such as chickens, ducks, turkeys, etc.), rodents (e.g., hamsters, guinea pigs, gerbils, rabbits, hedgehogs, ferrets, chinchillas, etc.) and wild, exotic and zoo animals (e.g., wolves, bears, deer, etc.).

[0056] In some embodiments of this invention, the animal is a cat.

[0057] In other embodiments of this invention, the animal is a dog.

[0058] The method of the invention will be found especially beneficial in cases where the animal is, or has become, finicky, has poor appetite, or is in ill health, all of which can occur in animals of all ages but especially in aged animals. The method will also be found especially beneficial where the food composition is one to which the animal is accustomed, or contains ingredients or a balance of ingredients designed to improve health or wellness with less emphasis on palatability.
EXAMPLES

[0059] The following example is merely illustrative, and does not limit this disclosure in any way.

Example 1

[0060] Dry pet food and containerized pet food products were prepared from existing formulas with the additional inclusion of essential oil of oregano.

[0061] Table 1 shows results of a palatability study in 25 cats offered test foods that were dry cat foods prepared with and without addition of essential oil of oregano to the pre-conditioner composition during preparation of the foods. Two control foods were provided.

[0062] An intake ratio (IR), defined as the average ratio of test food ingested to total food ingested, was determined for each test food in comparison with each of the two control foods. Each animal received a pre-weighed food dish containing the test food and, simultaneously, a pre-weighed food dish containing the control food. The food dishes were left with the animal for 24 hours, at the end of which the food dishes were removed and reweighed to determine intake ratio using the formula

$$IR = \frac{A}{A+B}$$

[0063] where A is the amount of the test food consumed by the animal and B is the amount of the control food consumed by the animal.

[0064] In Table 1, “parity” means no significant preference was observed for the test food over the indicated control (IR close to 0.5), and “win” means that the test food was preferred over the indicated control (IR substantially greater than 0.5), i.e., found more palatable on average by the cats in this study.

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[0065] All patents and publications cited herein are incorporated by reference into this application in their entirety.

[0066] The words “comprise”, “comprises”, and “comprising” are to be interpreted inclusively rather than exclusively.

What is claimed is:

1. A food composition for a companion animal, the food composition comprising an extract of a herb or spice that comprises at least one compound having the formula

   as a substantial flavorant ingredient; said extract being present in the food composition in an amount equivalent to at least about 1 ppm by weight of essential oil of oregano in content of compounds of said formula.

2. The food composition of claim 1, wherein said at least one compound comprises thymol.

3. The food composition of claim 1, wherein said at least one compound comprises carvacrol.

4. The food composition of claim 1, wherein said extract is an essential oil, an oleoresin, an infusion, a tincture or a distillate.

5. The food composition of claim 1, wherein said extract is essential oil of oregano.

6. The food composition of claim 1 that is a canned moist dog or cat food.

7. The food composition of claim 1 that is a dry dog or cat food.

8. The food composition of claim 1 that is a nutritional supplement.

9. The food composition of claim 1 that is a dog or cat treat.

10. A food composition for a companion animal, the food composition comprising an extract of a herb or spice of the botanical family Verbenaceae, said extract being present in the food composition in an amount equivalent to at least about 1 ppm by weight of essential oil of oregano in flavorant effect.

11. The food composition of claim 10, wherein said herb or spice is selected from the group consisting of lemon verbena, oregano and vervain.

12. A food composition for a companion animal, the food composition comprising an extract of a herb or spice selected from the group consisting of cinnamon, citrus, eucalyptus, lavender, oregano, peppermint, thyme and vanilla.

13. The food composition of claim 12, wherein the extract is an essential oil.

14. A method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of an extract of a herb or spice that comprises at least one compound having the formula...
as a substantial flavorant ingredient; said extract being added to the food composition in an amount equivalent to at least about 1 ppm by weight of essential oil of oregano in content of compounds of said formula.

15. The method of claim 14, wherein the animal is a cat.
16. The method of claim 14, wherein the animal is a dog.
17. The method of claim 14, wherein said herb or spice is oregano.
18. The method of claim 14, wherein said extract is an essential oil, an oleoresin, an infusion, a tincture or a distillate.
19. The method of claim 14, wherein the food composition is a canned moist dog or cat food.
20. The method of claim 14, wherein the food composition is a dry dog or cat food.
21. The method of claim 14, wherein the food composition is a nutritional supplement.
22. The method of claim 14, wherein the food composition is a dog or cat treat.
23. The method of claim 14, wherein said extract is mixed substantially homogeneously with the food composition.
24. The method of claim 14, wherein said extract is added topically to the food composition.
25. The method of claim 14, wherein the extract is diluted or dispersed in a powder or liquid carrier to form a palatability enhancer composition, and the extract is added in the form of said palatability enhancer composition.
26. The method of claim 14, wherein the amount of said extract added is equivalent to about 1 to about 1000 ppm by weight of essential oil of oregano in flavorant effect.
27. The method of claim 14, wherein the amount of said extract added is equivalent to about 5 to about 100 ppm by weight of essential oil of oregano in flavorant effect.
28. The method of claim 14, wherein the amount of said extract added is equivalent to about 10 to about 50 ppm by weight of essential oil of oregano in flavorant effect.
29. A method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of at least one compound having the formula

30. The method of claim 29, wherein said at least one compound is added to the food composition in an amount of about 1 to about 1000 ppm by weight.
31. The method of claim 29, wherein said at least one compound is added to the food composition in an amount of about 5 to about 100 ppm by weight.
32. The method of claim 29, wherein said at least one compound is added to the food composition in an amount of about 10 to about 50 ppm by weight.
33. A method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of an extract of a herb or spice selected from the group consisting of lemon verbena, oregano and vervain.
34. The method of claim 33, wherein said extract is selected from the group consisting of lemon verbena, oregano and vervain.
35. A method for enhancing palatability of a food composition to a companion animal, the method comprising adding to the composition a palatability enhancing effective amount of at least one compound having the formula

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