

1

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NUTRITION AID

Ralph H. Gross, Fort Lauderdale, Fla.

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This invention relates to an improved composition and method of use adapted as an aid in nutrition and building of non-specific immunity to infectious diseases for a warm blooded living body.

The composition hereof is composed of two factors, the first of which is adapted as an astringent substance, which appears to increase the metabolic activity of the body and resulting phagocytosis to increase resistance to certain diseases characterized by enteritis of the digestive tract generally caused by ingestion of harmful bacteria or protozoa. The second factor is a vitamin A concentrate which in itself tends to raise the immunity of the body to such diseases, but primarily in the combination hereof, tends to aid in the assimilation of nutrition to cooperate with the enhanced metabolic activity of the astringent substance. The use of both factors of the composition tends to aid the nutrition, building weight, particularly in the bodies of animals while substantially raising their general immunity to infectious diseases attacking the body through the digestive tract.

In the feeding of animals with the combined factors hereof, it is preferable that they be given the astringent substance prior to feeding and the vitamin after the feeding for optimum cooperative effect of each. However, substantially improved feeding is obtained by feeding the animal the combination of both substances as a tablet but it is more convenient to associate these factors with the food which is ingested by the animal. A useful form is to associate the astringent with a first portion of food and the vitamin with a second portion of food for each feeding.

Where the two factors are associated into a single composition they are desirably in a solid wax-like carrier substance which tends to slow the absorption of each while acting as a protective carrier both for the water soluble astringent and for the readily oxidizable fat soluble vitamin A. Such carrier, moreover, allows ready combination with other vitamins, stabilizers, and desirable minerals. As shown in British Patents 681,931 and 681,930 the waxy carrier can be formed into very small spheroidal particles allowing accurate quantitative introduction thereof into an animal food base for the vitamin A and, for purposes hereof, astringent substance for which it is caused to serve as a carrier.

The dosage will vary with the normal weight of the animal. For example, for poultry, the astringent may be fed in proportions of about 10 to 20 grains preferably about 15 grains per feeding and the vitamin A will be fed in proportions of 20,000 to 30,000 U. S. P. units per feeding. For larger animals the dosage is increased proportionally. For example, for a ruminant animal the dosage will be increased several fold. For example, a cow would be fed a minimum of about 25 grains of astringent ranging upwardly to 100 grains of astringent per feeding and the vitamin would range upwardly from 25,000 to 150,000 units per feeding. Such proportions for animals are adjusted to allow continuous gain of

2

weight, but where gain of weight is not essential or is undesirable, the dosage would be substantially reduced to approximately 10 to 15 grains of astringent and 25,000 U. S. P. units of vitamin A for a daily dosage.

5 Any astringent substance may be used as the astringent providing it is generally non-toxic but I prefer one which is substantially water soluble, and which contains salts desirably assimilated by the body. Thus for astringent, I use an alum such as the double alkali metal salt with
10 aluminum existing as a sulfate. Such alkali metals as sodium, potassium, lithium or ammonium may be used, but the most desirable form readily assimilated is the potassium alum. While vitamin A in this composition is essential to complement the enhanced metabolic activity
15 caused by astringent substance, other fat soluble vitamins may be present particularly vitamin D₂ and water soluble vitamins as vitamin B, as complex vitamins B₁ through B₆ and vitamin B₁₂, and vitamins C and K may be added. Also minute portions of trace elements having known desirability in nutrition may likewise be present. The vitamin A will usually be used in the alcohol or ester form and is generally combined with an anti-oxidant such as hydroquinone, but tocopherols may serve this purpose.
20 In tablet form excipients such as starch, lactose, dextrin, talcum, or acacia are usually added. Where a waxy carrier is used any of the hydrogenated vegetable oils such as hydrogenated cotton seed oil or soya bean oil may be used with or without fatty stabilizers such as lecithin.
25 The following examples illustrate the practice of this invention.

Example 1

Factor 1.—15 grain pill of compressed powder moistened with a trace of a binder composition such as a 10% dextrin in water and pressed to a 15 grain tablet.

Factor 2.—The following composition after homogeneous mixing is assembled into a capsule in proportions as given:

Ingredient:	Quantity
Vitamin A (palmitate)-----	25,000 U. S. P. units.
Vitamin D (irradiated ergosterol) -----	1,600 U. S. P. units.
Thiamine hydrochloride U. S. P. (B ₁) -----	10 mg.
Riboflavin U. S. P. (B ₂)-----	5 mg.
Pyridoxine hydrochloride (B ₆)-----	1.25 mg.
Ascorbic acid U. S. P. (C)-----	150 mg.
Niacin amide U. S. P.-----	150 mg.
Calcium pantothenate -----	10 mg.
Vitamin B ₁₂ crystalline (U. S. P.) -----	6 mcg.
Folic acid U. S. P. -----	0.34 mg.
Ferrous sulfate dried U. S. P. (equivalent to 15 mg. of iron) -----	51 mg.
Calcium (from dicalcium phosphate anhyd.) -----	28.8 mg.
Phosphorus (from dicalcium phosphate anhyd.) -----	22.3 mg.
Iodine (from potassium iodide) -----	0.15 mg.
Manganese (from manganese sulfate) -----	1.5 mg.
Cobalt (from cobalt sulfate)-----	0.15 mg.
Molybdenum (from sodium molybdate) -----	0.5 mg.
Copper (from copper sulfate)-----	1 mg.
Magnesium (from magnesium sulfate) -----	10 mg.
Zinc (from zinc sulfate) -----	1 mg.