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NOTE

A Method for Preparation of Zinc Ions, Vitamin C and Amino Acids Compositions

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Zinc salt, a source of ascorbic acid and one amino acid formed a composition that zinc salt has an interaction with ascorbic acid. This composition provide for slow release of zinc upon with a palatable taste and no aftertaste.

Key Words: Zinc salt, Ascorbic acid, Amino acid.

Vitamin C is one of the safest and most effective nutrients[1-7]. It may not be the cure for the common cold (though it's thought to help prevent more serious complications). But the benefits of vitamin C may include protection against immune system deficiencies, cardiovascular disease, prenatal health problems, eye disease, and even skin wrinkling. Vitamin C has received a great deal of attention and with good reason. Higher blood levels of vitamin C may be the ideal nutrition marker for overall health.

The most study of vitamin C relates to the better understanding of how diverse it is in protecting human health, from cardiovascular, cancer, stroke, eye health (and) immunity to living longer.

Zinc is an essential mineral that is found in every cell in human body. It stimulates the activity of about 100 enzymes, substances that promote biochemical reactions in human body. Among its many functions, zinc helps maintain a healthy immune system, is needed for wound healing, helps to maintain your sense of taste and smell and is needed for DNA synthesis. Zinc also supports normal growth and development during pregnancy, childhood and adolescence and helps sperm develop and is needed for ovulation and fertilization[8-10].

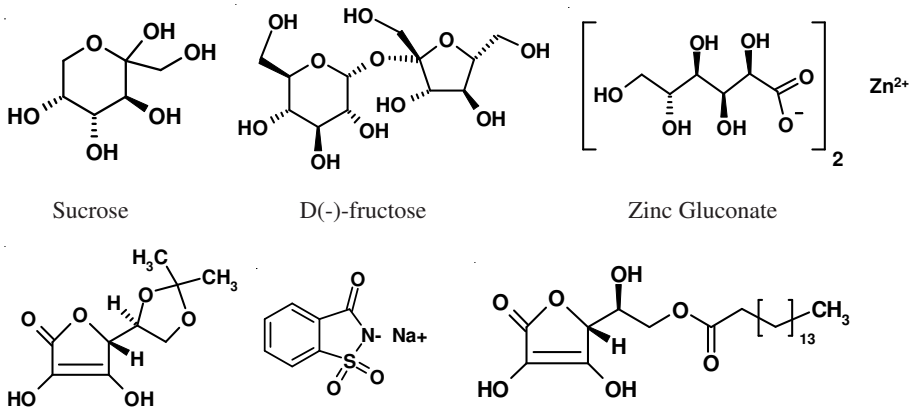
Taking lozenges made of zinc gluconate can help shorten the length of a cold. Most forms of zinc work equally well, but if you're trying to prevent a cold, use zinc lozenges or a zinc spray made of zinc gluconate. Because zinc can block copper absorption, make sure that your supplement also contains 1 to 2 mg of copper.

A zinc gluconate glycine concentrate was prepared. A mixture of 61.2 g glycine and 41.6 g zinc gluconate trihydrate was ground together in a grinder to a very fine zinc gluconate/glycine (ZGG) powder.

A mixture of 25.7 g ZGG and 6.8 g magnesium L-ascorbate (90 % purity) was ground to a fine powder in a grinder.

200 g hard candy base (HCB) was heated in an aluminum pan at 180 ºC for 40 min to convert it to mobile syrup. To this was added 15.6 g of the ZGG/magnesium ascorbate powder. After stirring, this mixture was spread onto a lightly greased aluminum sheet and pressed to form a 6" diameter disc. Upon cooling, the material was broken up into solid, slightly cream colored, off-white lozenges, average weight 4.5 g.

The base material which can be used as a carrier for the zinc compound, amino acid and source of ascorbic acid can be a sweetening agent such as a soft or hard candy base[11]. Alternatively, syrup such as corn syrup or a gum material such as chewing gum may be used. Saccharine is a sweetening agent that could be used at making of corn syrup step. Also, Sucrose and D(-)-fructose may be used in candy base (**Scheme-I**).



Scheme-I: Molecular structure of sucrose, fructose, zinc gluconate, ascorbic acid, saccharine and ascorbyl palmitate.

Amino acids useful in this work are mono-carboxylic amino acids including glycine, D,L-alanine, L-2-aminobutyric acid, D,L-2-aminobutyric acid, L-valine, D,L-valine, L-isovaline, D,L-isovaline, L-leucine, D,L-leucine, D-isoleucine, D,L-isoleucine, L-lysine, and D,L-lysine.

Magnesium L-ascorbate or L(+) ascorbyl palmitate (6-palmitoyl-L-ascorbic acid) could be applied as a source of ascorbic acid in preparation of composite.

Any form which permits the oral intake of the zinc/ascorbic acid combination and particularly where the composition is retained in the mouth for a substantial period of time to permit prolonged contact in the mouth with the zinc to provide a slow release of zinc into the mouth may be used. Preferably, the base material is a hard or soft candy base optionally containing a flavouring agent such as a fruit flavour concentrate or a syrup such as a natural or artificially sweetened syrup.

The composition of this work may also optionally include a minor proportion relative to zinc (about 0.01 to 0.1 molar equivalents) of a copper salt such as the sulfate, chloride, acetate, gluconate, ascorbate, citrate, aspartate, carbonate, picolinate, orotate and transferring salts, as well as cupric oxide and complexes of divalent copper with amino acids.

Conclusion

In this work, a composition was prepared through a zinc salt, a source of ascorbic acid and one amino acid with a candy base. A mixture of zinc gluconate/glycine and magnesium L-ascorbate was used in preparation of this composite. This composition provide for slow release of zinc upon with a palatable taste and no aftertaste.

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