

AgrumaxTM LIQUID*

Technical Product Ecological Microbiostatic and Antioxidant

*also Known as: **Agrisept LTM**

Composition

-Organic ecological compounds	50.00 % b/w
-Ascorbic Acid and Ascorbates (vit.C), with high level of Bioavailability, linked with Citrus Bioflavonoids (vit.P)	4.00 to 7.20 %
-Hydrated glycerin linked with other traces of Citrus Polyphenols, Carbohydrates, Bio-flavoproteins, Pectin, Citrus Sugars, Citric Acid, Citric Salts and Biomass	30.80 to 36.60 %
-Water from constitution and crystallization	6.00 to 11.00 %
-Stabilizer and Inert carrier	50.00 % b/w
TOTAL.....	100.00%

Remarks

Because of its make up, alterations in the original concentration of Agrumax^{LIQUID} may occur due to harvesting, weather, soil conditions etc..

Raw materials of Agrumax^{LIQUID}

- Citrus Grapefruit (Citrus Paradisi)
- Citrus Bergamot (Citrus Aurantium)
- Citrus Sweet Orange (Citrus Sinensis)
- Citrus Tangerine (Citrus Reticulata)
- Organic Acids
- Vegetal Glycerine

Mode of action of Agrumax^{LIQUID}

The extended microbiostatic action of Agrumax is also a result of the synergism between Ascorbic Acid (vit. C), Citrus Bioflavonoids (vit. P), and the other organic acids contained in Agrumax .

The Antioxidant action of Agrumax is also a result of the synergism between Ascorbic Acid (vit.C), Citrus Bioflavonoids (vit.P) and Citric Acid. This Antioxidant action has powerful Beneficial Residual Antioxidant Action and Free Radical Scavengers.

Bacteriostatic and fungistatic spectrum of Agrumax^{LIQUID}

BACTERIA

Salmonella cholerae suis, Salmonella typhi, Salmonella anatum, Salmonella enteritidis, Salmonella gallinarum, Escherichia coli, Staphylococcus aureus, Staphylococcus faecalis, Klebsiella pneumoniae, Proteus mirabilis, Proteus vulgaris, Streptococcus faecium, Micrococcus spp, Pasteurella multocida, Pasteurella haemolytica, Clostridium perfringens, Clostridium sulfireductores, Pseudomonas aeruginosa, Shigella dysenteriae.

FUNGI

Candida albicans, Penicillium spp, Penicillium funiculosum, Aspergillus flavus, Aspergillus oryzae, Mycosphaerella musicola, Mycosphaerella fijensis, Fusarium solani, Fusarium spp, Fusarium graminearum, Rhizoctonia solani, Alternaria solani, Phoma insidiosa, Colletotrichum lindemuthianum, Monilinia spp, Sclerotium rolfsii, Drechslera sorokiniana, Phyllosticta maytis, Nigrospora oryzae.

Mutagenic and carcinogenic study of Agrumax^{LIQUID} (by xenometrix inc. - usa)

Agrumax in liquid version was tested according to the latest techniques in Molecular Toxicology: Pro-Tox (c), Bacterial Stress Gene Assay; Cat-Tox (L), Human Liver Cell Stress Gene Assay; and Ames II (complete), Salmonella Mutagenesis Assay; by Toxicology Reference Laboratory Services "Xenometrix Inc", Denver - Colorado - USA.

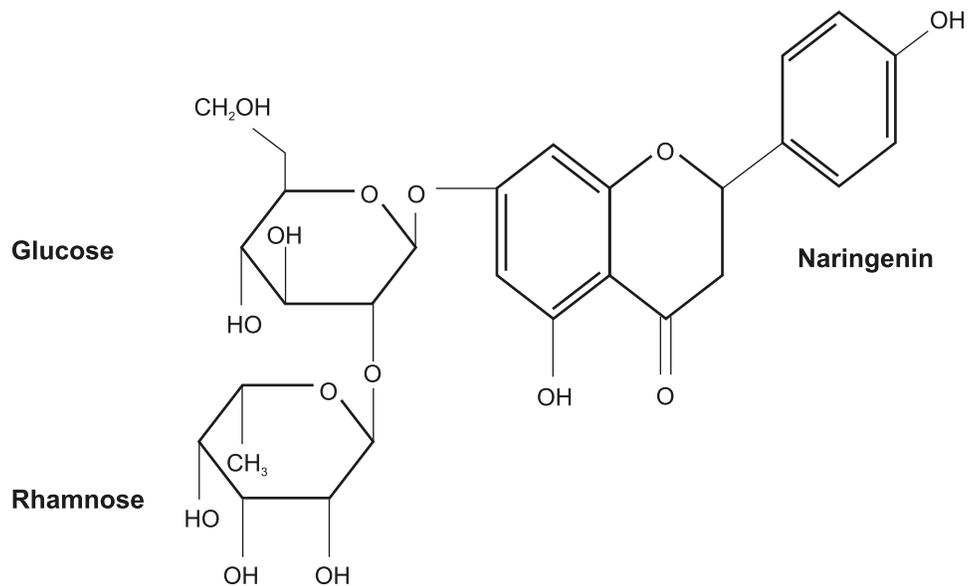
Conclusion: Biocitro doesn't affect DNA (Deoxyribonucleic Acid) which is the essential component of chromosomes in the cell nucleus and the carrier of genetic information. Biocitro is non-Mutagenic and non-Carcinogenic.

Technical information

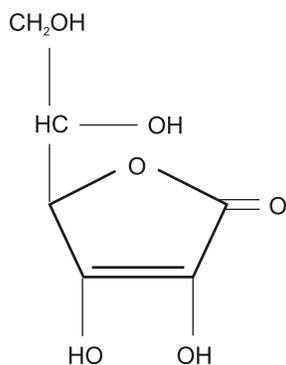
- Appearance and aspect: Crystalline viscous liquid.
- Organoleptic characteristics:
 - Taste: Bitter Acid and Astringent (Citrus Bioflavonoids)
 - Odor: Agreeable (light citrus smell)
 - Color: Crystalline honey appearance, which with aging darkens, but doesn't affect its efficacy.
- Density (g/ml at 25°C): 1,160 (± 5%).
- pH (10% dilution at 25°C): 2,75 (± 15%).
- Acidity (quantity of product mg neutralized by 1 ml of NaOH 1N): 1300 (± 15%).
- Ascorbic Acid (Vit. C) and Citrus Bioflavonoids (Vit. P) - Synergistic Association: 56.000 ppm (± 25%).
- Naringin (Citrus Bioflavonoid from Grapefruit): 6500 ppm minimum.
- Nitrogen (Kjeldahl Method): 0,62% (± 15%).
- Solubility: 100% in water, alcohol and glycerin.
- Corrosivity: At 2000 ppm it is similar to potable water.
- pH for use in mixing: Better with products within the pH range 3.0 to 9.0
- Expiration: Three (3) years after manufacturing date. Right closed drums.
- Stability:
 - With aging this changes to a dark crystalline honey color but without affecting its efficacy.
 - Very stable at normal temperatures (4°C to 40°C): but over 120°C its stability is reduced .
 - Incompatible with anionic products .
 - Very stable under light.
 - Hard water (Ca, Mg) can reduce its efficacy.

Chemical structure of main Agrumax^{LIQUID} compounds

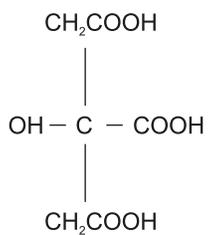
a) e.g. Glycoside Bioflavonoid - "Naringin" (C₂₇H₃₂O₁₄) from "Grapefruit"



b) Ascorbic Acid (C₆H₈O₆)



c) Citric Acid (C₆H₈O₇)



D) Omega Fatty Acids e.g. Linoleic Acid (Essential fatty Acid)

Noble biological properties of Agrumax^{LIQUID}

- a) Agrumax^{LIQUID} is 100% Ecological and Biodegradable.
- b) Agrumax^{LIQUID} is Non Toxic to man, animals and vegetables.
- c) Agrumax^{LIQUID} is Non Corrosive and Non Volatile.
- d) Agrumax^{LIQUID} has Ecological Microbiostatic extended action, working against many strains of Pathogenic Bacteria and Fungi.
- e) Agrumax^{LIQUID} contains natural Antioxidants (Ascorbic Acid, Bioflavonoids, Citric Acid) with high levels of bioavailability and has excellent mutual working synergism and stability.
- f) Due to its Microbiostatic and Antioxidant noble qualities, Agrumax, as a Technical Product, is recommended for the following uses:
- To protect the Polyphenols and other natural compounds in medicinal and cosmetic natural herbs or extracts; thereby preventing aromatic contamination by bacteria, fungi and oxidation;
 - External Decontamination of animal Carcasses (Broilers, Swine, Bovines, Rabbits, etc);
 - External Decontamination of fresh Fish and Seafood;
 - External Decontamination of Vegetables and Fruit;
 - External Decontamination of Cheese;
 - To drastically reduce the use of Antibiotics, by putting it in the Drinking Water, as a Prophylactic and/or Growth Promoter for monogastric animals. Agrumax helps produce more profitable meat according to ecological production requirements;
 - Noble Disinfection, Noble Decontamination.
- g) Due to its Microbiostatic Extended Action, which takes place in the digestive tract of monogastric animals, and its powerful Antioxidant Action; Agrumax provides better Absorption of Nutrients and Vitamins, and also prevents Pathogenic Diarrhea, principally in young animals.
- H) Sequestering Free Radicals that cause Chronic Chemical Intoxication in monogastric animals.
- i) The continuous use of Agrumax by monogastric animals in the meat and egg producing process provides improved organoleptic characteristics:
- Better natural taste;
 - Better natural smell and;
 - Better texture and pigmentation.
- This noble property has a scientific-technical explanation, Bioflavonoids and Ascorbic Acid affect enzymatic lipid peroxidation due to their enzyme inhibiting activities as well as non enzymatic lipid peroxidation due to their Antioxidant properties, which includes Free Radical Scavengers.
- j) Agrumax^{LIQUID} contains Ascorbic Acid (Vit. C) with a high level of Bioavailability, thereby reducing the stress caused by heating and/or cooling, especially for confined monogastric animals.
- K) Agrumax^{LIQUID} doesn't sterilize the gastro-intestinal digestive system of monogastric animals, and it works, at the correct dosage, as a Natural Flora Protector of the digestive tract.
- l) Agrumax^{LIQUID} when used in drinking water, drastically reduces the mortality of young animals (Ex.: chicks, pullets, piglets, etc) caused mainly by Pathogenic Contamination and Intoxication by Toxins (Mycotoxins and Enterotoxins).
- m) Agrumax^{LIQUID}, when used in Drinking Water, increases the Productivity of Poultry Stock Breeders, Commercial Laying Hens, Broilers, Weaning Piglets, Swine, Rabbits, Calves, Colts, etc:
- Improves fertility and hatchability (hens);
 - Increases egg yield (hens);
 - Reduces mortality and diarrhea (young animals);
 - Improves feed conversion;
 - Improves the quality of eggs (hens);
 - Improves the quality of meat.
- n) Agrumax^{LIQUID} has excellent Extended Action that increases the "Shelf-Life" of Animal Carcasses; Fresh Fish and SeaFood; Vegetables and Fruit; and Cheese. It prevents contamination by microorganisms and toxins and protects against Oxidation.

O) Agrumax has efficacy in the presence of Organic Matter. It has a pH between 2.0 to 3.5 and it is effective at both Acid and Alkaline pH.

P) Agrumax can reduce or eliminate the use of Additives and Antioxidants, used to protect animal carcasses, fresh fish and seafood, vegetables, fruit and cheese.

q) Agrumax is an Excellent Deodorizer when used in the Disinfection of Food Processes rooms, protecting the food against contamination by microorganisms, and eliminating Fetid odorous.

r) Agrumax Extract of Plants

- Agrumax also works with synergism when mixed with Plant Extracts that contain other Natural Polyphenols, for example:

- Rosemary (Rosmarinus Officinalis L)

Polyphenols: Rosmarinic Acid, Pinene, Cineol, Borneol and others;

- Salvia (Salvia Officialis L)

Polyphenols: Ursolic Acid, Oleanolic Acid, Rosmarinic Acid, Tannic Acid, Borneol, Cineol and others;

- Cinnamon (Cinnamomum Zeylanicum Ness)

Polyphenols: Cinnamic Acid, Eugenol, Vaniline, Cinnamic Aldehyde, Pinene, Cineol and others;

- Oreganum (Origanum)

Polyphenols: Thymol, Carvacrol, and others;

- Green Tea

Polyphenol: EGCG (Epigallocatechin);

- Black Tea

Polyphenol: Theaflavine; Etc.

Industrial characteristics of Agrumax^{LIQUID}

a) The application of Agrumax in Agro-industries, Food Aromatic Medicinal herb Industries, Phyto-Cosmetic Industries, Veterinary and Animal Nutrition needs to be carried out by qualified personnel in the specific professional area.

b) Compatibility of Agrumax^{LIQUID}

- Agrumax works with Synergetic Action with Antibiotics and appears to broaden the spectrum of action of Antibiotics considerably.

- Before using Agrumax it is very important to verify its compatibility with the other chemoterapics normally used.

c) Agrumax has efficacy in presence of Organic Matter. It has a pH between 2.0 to 3.5 and it is effective at both Acid and Alkaline pH.

d) Due to its composition, it is very difficult to identify traces (below 2000 ppm) of Agrumax, when mixed with different organic products.

e) In order to have the best mixing between Agrumax and organic products, it is recommended to make a premix with a liquid product (water, alcohol, glycerin, etc). In this way, the final mixing will be more homogeneous.

f) Agrumax^{LIQUID} is 100% Ecological and Biodegradable; Non Corrosive; Non Volatile; and Non Toxic to man, animals and vegetables.

g) Precautions when using Agrumax^{LIQUID}

- When handling Agrumax use the Personal Protection Equipment: eyeglasses, gloves, shoes, headgear, apron, etc.

- If accidental contact with the eyes occurs first wash with potable water and if the irritation continues, seek medical assistance.

- Empty packages must be stored and destroyed in accordance with the regulations for chemical products.

H) Instructions for Storing Agrumax^{LIQUID}:

- Keep the fiber drums containing Agrumax^{LIQUID} closed and store in a dry fresh place.

- Keep the fiber drums out of reach of children and domestic animals.

Basic dosages of Agrumax^{LIQUID}

Due to the Noble Biological properties of Agrumax, and its very Broad Spectrum of uses, the Technician needs to carry out laboratory and pilot tests, before defining the correct dosages of Agrumax^{LIQUID}, according the local requirements.

The following dosages are guidelines for the technician to develop the specific industrial formulas.

I- Agrumax^{LIQUID} as a decontaminator of aromatic, natural medicinal and cosmetic herbs

Vegetal materials need to be protected against Fungi, Bacteria and Oxidation of their Essential Oils.

a) During Pre-Harvest (one to three days before the harvest).
(400 to 600 ppm) - 2 to 3 ml in 5 lt of water.
spraying the aerial part of the plant.

b) During Post-Harvest (on the harvest day).
(400 to 600 ppm) - 2 to 3 ml by 5 lt of water.
Spraying the whole plant, including the roots.

II- Agrumax^{LIQUID} as an external decontaminator of food

Agrumax^{LIQUID} has Prolonged Noble Microbiostatic Action which makes it an excellent food decontaminator when used externally on the food:

a) External Decontamination of Fresh Animal Meat Carcasses
(cattle, poultry, swine, rabbits, etc).
(400 ppm) 2 ml in 5 lt of water Spraying

b) External Decontamination of Fresh Carcasses of fish, shrimps,
lobsters etc. (400 ppm to 600 ppm) 2 to 3 ml in 5 lt of water
Dip after the cleaning / washing process for 1 to 2 minutes

c) Water to produce "Preserving Ice" (Fishing Industries)
(600 ppm) - 3 ml in 5 lt of potable water

d) External Decontamination of Cheese
(400 ppm to 600 ppm) - 2 to 3 ml in 5 lt of water
Dip after the final manufacturing process for 1 to 2 minutes

e) External Decontamination of Fresh Vegetables
(200 ppm to 400 ppm) - 1 to 2 ml in 5 lt of water
Dip after the cleaning / washing process for 1 to 2 minutes

f) External Decontamination of Fruits
(400 ppm to 600 ppm) - 2 to 3 ml in 5 lt of water
Spray or dip after the cleaning / washing process for 1 to 2 minutes
To preserve fruit Biocitro^{LIQUID} can be used when mixed with Carnauba Wax
Before packing, some fruit and vegetables (tubercles) must be dried, with The use of fans if necessary.

III- Agrumax^{LIQUID} as an agro-industrial sanitizer

- Agrumax^{LIQUID} is a Noble Ecological Disinfectant: non-toxic, non-corrosive, non-volatile, 100% Ecological and Biodegradable, an Excellent deodorizer which eliminates fetid odorous, there are no contraindications and it mixes 100% homogeneously with water.

- Agrumax^{LIQUID} is a modern Ecological Sanitizer which helps guarantee better quality Food products and helps in the HACCP program in Food industries.

- Agrumax^{LIQUID} has many applications in the Food industry. The following are some of the most important.

a) Industrial Sanitizer, applied by fogging manufacturing food process rooms.
Prepare a solution of (1200 ppm): 6ml in 5 lt of water. Use this solution no later than one day after making it up.
Application: daily at the beginning of the working process.

b) General Disinfectant of Process Installations and equipment.
(600 to 800 ppm) 3 to 4 ml in 5 lt of water.

c) Special Disinfection of Air Conditioning Systems.
(1200 to 1600 ppm) 6 to 8 ml in 5 lt of water.

d) Disinfection of vehicles for transport of raw material.
(600 to 800 ppm) 3 to 4 ml in 5 lt of water.

E) General Disinfection of Slaughter Houses, Cold storage plants, Refrigeration trucks and ships etc.
(600 to 800 ppm) 3 to 4 ml in 5 lt of water.

f) Special Disinfection of Dairy Industries
(800 to 1200 ppm) 4 to 6 ml in 5 lt of water.

g) Special Disinfection of Fish and Seafood Industries (rooms and equipment)
(600 to 1200 ppm) 4 to 6 ml in 5 lt of water.

h) Special Disinfection of Agro-Industries (rooms and equipment for processing vegetables and other agricultural products)
(800 to 1200 ppm) 4 to 6 ml in 5 lt of water.

IV- Agrumax^{LIQUID} as an ecological veterinary disinfectant

- Agrumax^{LIQUID} is a Noble Ecological Disinfectant: non-toxic, noncorrosive, non-volatile, 100% Ecological and Biodegradable, an excellent deodorizer which eliminates fetid odorous, there are no contraindications and it mixes 100% homogeneously with water.

- Disinfection by Agrumax^{LIQUID} leaves the environment very close to its Natural state, because animals and people are healthier at low contamination's levels. Remember: The Sterile environment is very dangerous to health.

- Agrumax^{LIQUID} has a lower Knock-Down during the initial minutes after its application, but has a prolonged microbicidal action, which continues to work long after other regular disinfectants have stopped.

a) General disinfection of environment, installations and livestock equipment:
(600 to 800 ppm) 3 to 4 ml in 5 lt of water.

b) Special disinfection of surgical rooms, instruments, operational fields, equipment for artificial insemination and embryo transfer, veterinarian's hands:
(1200 to 1600 ppm) 6 to 8 ml in 5 lt of potable water.

c) Animal Sanitary bath (genitals, udders, teats):
(600 to 800 ppm) 3 to 4 ml in 5 lt of potable water.

d) Helps to heal wounds and burns and other skin infections: Wash the wounds and burns daily.
(1200 to 1600 ppm) 6 to 8 ml in 5 lt of potable water.

e) Washing of Fertile Eggs and Incubators:
(1200 ppm) 6 ml in 5 lt of potable water.

f) Humidifiers of egg incubations plants:
(600 ppm) 3 ml in 5 lt of water.

g) Vehicles for transporting animals, animal feed, etc.:
(1200 ppm) 6 ml in 5 lt of water.

h) Prophylaxis of Mastitis:
Prepare a glycerin solution with Agrumax^{LIQUID} and apply using a plastic glass, dipping the teat and allowing it to dry naturally.
Glycerin solution:

- 1 ml of Agrumax^{LIQUID};
- 200 ml Glycerin USP;
- 1800 ml of potable water.

i) Cleanses the drinking water of Monogastric Animals
(100 ppm) 1ml in 10 lt of drinking water.
Remark: Not to be used for Ruminant drinking water.

j) General disinfection of SlaughterHouses, cold storage plants, refrigeration trucks and ships, etc.
(600 to 800 ppm) 3 to 4 ml in 5 lt of water.

V-Agrumax^{LIQUID} as prophylactic by fogging application in poultry and swine yard-houses

Agrumax^{LIQUID} is an excellent prophylactic, protecting livestock against many diseases caused by Bacteria and Fungi which are present in the air in the confined animal housing system (Ex: Poultry and Swine). These Microorganisms can cause many diseases in the animal Respiratory System.

The synergetic action of Ascorbic Acid (vit. C) with high Bio-Availability and Bioflavonoids (vit. P) has Microbiostatic and Antioxidant action against Bacteria and Fungi providing extended and beneficial action that protects the animals and increases their immunological system.

01 - Dosage and Applications of Fogging for Poultry Farms

a) Treatment for new chicks, in order to protect them against Aspergillosis and other Respiratory problems and enhance their immunological system.

- Example for birdhouse with 3,000 chicks.

Prepare a solution of (1200 ppm): 6 ml in 5 lt of water, using this in solution no later than one day after making it up. The size of the fogging particles must be less than 5 microns. The environmental temperature must be higher than 15°C (59°F), in order to avoid closing the lung alveoli of the chicks: Fog 0,5 lt of this solution (1200 ppm), twice daily, for the first week of life.

b) Treatment for Broilers, Hens, Turkeys, in order to protect the birds against respiratory problems and enhance their immunological system.

- Example for birdhouse with 10,000 birds.

Prepare a solution of (1200 ppm): 6 ml in 5 lt of water, using this solution no later than one day after making it up. The size of the fogging particles must be less than 5 microns.

- Bio-Security and Potential Respiratory Problems: 3 lt of this solution (1200 ppm), three times per week, for life.

- Coadjuvant when respiratory problems exist or if there is plague in the neighborhood: 4 lt of this solution (1200 ppm), twice daily, for two to five days.

02 - Dosage and Applications of Fogging for Confined Swine Farms

A) Treatment for Maternity Rooms, in order to protect the suckling piglets against respiratory problems and enhance their immunological system.

- Prepare a solution of (1200 ppm): 6 ml in 5 lt of water, using this solution no later than one day after making it up. The size of fogging particle must be less than 5 microns.

- Bio-Security and Potential Respiratory Problems: 1 lt of this solution (1200 ppm), three times per week, 500 square meters each, for life.

- Coadjuvant when respiratory problems exist or if there is plague in the neighborhood: 4 lt of this solution (1200 ppm), twice daily, 500 square meters each, for two to five days.

03 - Dosage and Applications of Fogging for Other Confined Animals (ExHorses, dogs, zoological, etc.)

As wild animals aren't allergic to Agrumax^{LIQUID} it can be used in zoological Gardens.

- Bio-Security: 0,2 lt of this solution (1200 ppm), three times per week, 100 Square meters each, for life.

VI- Agrumax^{LIQUID} as an acidifier and antimicrobial for drinking water for poultry, swine and other monogastric animals

- The Acidifying action of Agrumax^{LIQUID} activates the Neuro-Vegetative System by Increasing Nutrient Absorption.

- Agrumax^{LIQUID} has Antimicrobial Gastro-Intestinal Action that acts against pathogenic microorganisms that originate in the feed, drinking water or the environment. These microorganisms Affect the Immunological System cause Stress, Diarrhea, and interfere with Nutrients Absorption, thus not allowing the animals to reach their Maximum Genetic Potential.

- Agrumax^{LIQUID} contains Ascorbic Acid (Vit. C) with excellent stability and high Bio-Availability, and Bioflavonoids (Vit. P), that helps diminish problems caused by Stress (cold or hot weather) in poultry and swine farms.

01 - Dosage and Application in Drinking Water for "Poultry Farms"

a) Parent Breeders and Commercial Layers

- First week: (200 ppm) 10 ml in 50 lt of water - daily.
- Second week until 17-18 week: (120 ppm) 6 ml in 50 lt of water - three times per week.
- From the Beginning of laying time: (100 ppm) 5 ml by 50 lt of water - three times per week.

B) Broilers

- First week (chicks): (200 ppm) 10 ml in 50 lt of water - daily.
- From Second week on: (120 ppm) 6 ml in 50 lt of water - three times per week.
- Two days before slaughtering: (200 ppm) 10 ml in 50 lt of water - daily.

c) Turkeys

- First and second weeks: (250 ppm) 12,5 ml in 50 lt of water - daily.
- From Third week on: (120 ppm) 6 ml in 50 lt of water - three times per week.
- Two days before slaughtering: (250 ppm) 10 ml in 50 lt of water - daily.

d) Stress Periods in Poultry Caused by Heat, Cold, Transport or Plague.

- Stress and plague caused by Bacteria (Ex. Salmonellosis): (250 ppm) 10 ml in 50 lt of water - during sickness.
- Plague caused by Fungi or Feed Contaminated by Mycotoxins (300 ppm) 15 ml in 50 lt of water - during sickness.
- Plague in Turkeys caused by Candida A. or Feed Contaminated by Mycotoxins (300 ppm) 15 ml in 50 lt of water - during sickness.

Important: When vaccinating via drinking water with "Live Virus", then the use of Agrumax^{LIQUID} must be stopped two (2) days before the vaccination; continue with the Agrumax treatment 24 hours after vaccination. Agrumax^{LIQUID} will then reduce the injurious effects after vaccination.

Agrumax^{LIQUID} is an excellent adjuvant, in avoiding Immunosuppression after vaccination.

02 - Dosage and Application in Drinking Water for "Swine Farms"

a) First week of suckling piglets

Prepare a solution of (1000 ppm) 1 ml in 1 lt of water, and supply 3 ml of this solution per suckling piglet twice daily.

b) First week after weaning the suckling piglets

Prepare a solution of (1000 ppm) 1 ml in 1 lt of water, and supply 3 ml of this solution per suckling piglet twice daily.

c) Sows

Two weeks before giving birth and during the suckling piglets period (120 ppm) - 6 ml in 50 lt of water - daily.

D) Swine in growing and finishing stages

- Throughout their life until the end: (120 ppm) 6 ml in 50 lt of water - once per week.
- Two days before slaughtering: (200 ppm) 10 ml in 50 lt of water - daily.

References about Agrumax^{LIQUID} compounds (U.S. Food & Drug Administration)

According to the F.D.A. (Food & Drug Administration from the United States). Code of Federal Regulations , Part 182 "Substances Generally Recognized as Safe GRAS" 1st/April/1999 edition:

- Ascorbic Acid (Vit.C)	GRAS FDA 21-CFR-182.3013
- Citrus Extractives	GRAS FDA 21-CFR-182.20
- Grapefruit (Citrus Paradisi)	
- Bergamot (Citrus Aurantium)	
- Tangerine (Citrus Reticulata)	
- Orange Sweet (Citrus Sinensis)	
- Citric Acid	GRAS FDA-21-CFR-184.1033
- Citric Pectins	GRAS FDA-21-CFR-184.1588
- Citric Sugars (Extractives)	GRAS FDA-21-CFR-182.20 and GRAS FDA-21-CFR-184.1866
- Vegetal Glycerin	GRAS FDA-21-CFR-182.1320
- Fatty Acid	GRAS FDA-21-CFR-184.1065

Ascorbic Acid (Vitamin C) from higher level of bio-availability

The Ascorbic Acid (vitamin C) from Agrumax^{LIQUID} is very special, because the chemical linked with Citrus Bioflavonoids (Vitamin P) increases and improves its Bio-Availability and works due to its powerful synergism and excellent stability at very lower concentrations (ppm).

Vitamin C is a very important Vitamin for humans, animals and vegetables.

Ascorbic Acid (vit.C) is widely distributed in the plant and animal kingdom. Good sources are: Citrus Fruits, hip berries, acerola, fresh tea leaves, etc.

Ascorbic Acid (vit.C) is used as an Antimicrobial and Antioxidant in foodstuffs, animal feed and vegetables.

Ascorbic Acid (vit.C) participates in Redox (Reduction and Oxidation) processes in the organism, being reversibly converted into dehydro-ascorbic acid with the release of hydrogen.

From recent investigations, it is to be assumed that Ascorbic Acid (vit.C) participates in enzymatically controlled hydroxylation reactions in Micro- somal Metabolism in the form of Semi-Dehydroascorbic Acid and in this manner exerts its various Physiological functions.

The high reducing power of Ascorbic Acid (vit.C) gives it the character of a stabilizer towards readily oxidizable substances (e.g. Adrenalin). Important metabolism relationships exist between Vitamin C and other Vitamins and Enzymes, and manifest themselves in different actions (e.g. Synergism or inhibition). The anti-infectious activity that is based in particular on the inactivation of toxins, is possibly connected with these reactions.

Due to its powerful reducing action, Ascorbic Acid (Vit.C) is capable of substantially destroying the nitrites and nitrosating nitric oxide compounds widely found in foodstuffs, in drinking water in animal feed and in the atmosphere and can thus restrict or prevent both endogenously and exogenously, the formation of the highly carcinogenic nitrosamines.

Due to BIOXEM's special process the Ascorbic Acid (Vit.C) of Agrumax^{LIQUID}

Provides excellent Stability and High Level of Bio-availability, improving and increasing the use of Agrumax^{LIQUID} as an Antimicrobial and Antioxidant in situations where single Ascorbic Acid doesn't demonstrate good efficacy due its Quick Degradation and Oxidation.

Citrus Bioflavonoids (vitamin P)

Bioflavonoids are natural products widely found in the vegetal kingdom.

Bioflavonoids are natural Polyphenols naturally present in vegetables, fruits and beverages. High concentrates of Bioflavonoids can be obtained from all Citrus Fruits, rose hips, black currants and many other vegetables and fruits.

The main Bioflavonoids extracted from Citrus Fruits are:

- Naringin from grapefruit (Citrus Paradisi);
- Hesperedin from sweet orange (Citrus Sinensis);
- Tangeretin, Quercetin and Rutin from bergamot (Citrus aurantium) and tangerine (Citrus reticulata);
- Diosmin from lemon (Citrus limon) and lime (Citrus aurantifolia).

The Bioflavonoids contribute to the maintenance of normal blood vessel conditions by decreasing capillary, permeability and fragility. Due to this noble quality, Bioflavonoids are classified as vitamin P.

Physiological Benefits of Bioflavonoids:

a) Antioxidant Activity of Bioflavonoids:

Bioflavonoids are strong Antioxidants and Free Radical Scavengers.

Bioflavonoids can be Cytoprotectant in situations where oxidants or chemical radicals become injurious to the cell.

b) Cardiovascular Activity of Bioflavonoids:

The vasoprotective properties of Bioflavonoids have been very well known for a long time.

Bioflavonoids can reduce the risk of death from coronary heart disease, due to their Antioxidant activity.

Bioflavonoids reduce the influence of strong oxidants on the human cardiovascular system.

Lower intake of Bioflavonoids results in higher risks of coronary diseases.

c) Effects of Bioflavonoids on Lipid Peroxidation:

Bioflavonoids affect enzymatic lipid peroxidation due to their enzyme inhibiting activity as well as non-enzymatic lipid peroxidation due to their Antioxidant properties.

d) Anti-inflammatory Activity of Bioflavonoids:

Due to their Antioxidant and Lipid Peroxidation inhibiting properties, Bioflavonoids are effective against inflammatory processes.

Bioflavonoids have wound-healing effects and are useful in treating suppurative soft-tissue wounds.

Bioflavonoids stimulate Phagocytosis, enzyme production, proteolysis and the removal of protein and edema fluid from injured tissues.

e) Anticarcinogenic Activity of Bioflavonoids:

Due to their Bioflavonoid content, high consumption of vegetables and fruits is associated with reduced risk of cancer. Bioflavonoids act as antimutagenics and may have a role in the prevention of human and animal cancers. In addition Bioflavonoids enhance the effect of anti-tumor drugs.

Bioflavonoids scavenge Free Radicals involved in cell damage and subsequent tumor development.

f) Effects of Bioflavonoids on the Immune System:

Bioflavonoids were found to strengthen the immune system, especially in the gastrointestinal tract.

g) Antiviral Activity of Bioflavonoids:

Bioflavonoids are potent antiviral agents and they can affect the infectivity and replication of adenovirus, coronavirus and rotavirus in cell cultures.

Bioflavonoids were used to treat the Influenza virus infection in mice.

h) Anti-aging activity of Bioflavonoids:

Bioflavonoids may have a role in inhibiting the aging process due to its antioxidant and cytoprotective properties.

Bioflavonoids inhibit lipid peroxidation, which is also linked to the aging process in cells.

i) Antibiotic and anti-fungal activities of Bioflavonoids:

Bioflavonoids possess Antibiotic, Analgesic and Diuretic properties.

Bioflavonoids exhibit anti-fungal activity against candida albicans Fungi.

j) General Safety of Bioflavonoids:

Bioflavonoids are considered to be Non Toxic and Non Mutagenic.

Synergism between Ascorbic Acid (vit.C) and Citrus Bioflavonoids (vit.P)

a) Due to the powerful Noble Antioxidant Mutual Action between Ascorbic Acid (Vit.C) and Bioflavonoids (Vit.P), this association shows synergetic effects in the following activities Antioxidative, Antimicrobial, Immunological, Antiviral, Antiinflammatory, Anticarcinogenic, Anti-aging, Cardiovascular and Lipid peroxidation.

b) Bioflavonoids decrease the oxidation injury to dermal fibroblasts. This action is enhanced by the presence of Ascorbic Acid (vit.C).

c) Ascorbic Acid and Bioflavonoids improve the Enteric Immunity because they increase Phagocytosis.

d) Ascorbic Acid in synergism with Bioflavonoids has a triple beneficial effect, as: Cytoprotector, Vasoprotector and Immunostimulant, by improving and increasing the efficiency of epithelium and intestinal capillaries in the nutrient absorption process; and also improving the oral absorption of Antibiotics and Chemotherapics (ex. To prevent or control Respiratory diseases in Poultry and Swine).

e) The synergic action between Ascorbic Acid, Bioflavonoids, Bioflavoproteins and Omega Fatty Acids, improves the nutritional metabolism, acting as a regulator in Enzyme production (ex. Pancreatic enzymes), and inhibiting the enzymatic peroxidation of lipids; thus improving protein digestibility.

f) Ascorbic Acid and Bioflavonoids work as well as Hepatoprotectors, protecting the hepatic cells against Micotoxin Intoxication.

g) Many international scientific studies have shown that the Antioxidant power of Bioflavonoids is 5(five) times that of Vitamin E. The Bioflavonoids in synergetic action with Ascorbic Acid and Citric Acid work sequestering Free Radicals. The meat of animals continuously fed with Biocitrol liquid has better organoleptic characteristics and quality (taste, smell, texture, pigmentation, free of exudation, and increased shelf life).

h) Bioflavonoids in combination with Ascorbic Acid (vit.C) show synergistic effects in preserving the flavor of food, beverages,

animal feed, etc.

i) Bioflavonoids protect Ascorbic Acid (vit.C) from natural Degradation and oxidation caused by moisture, air and light.

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