



**Minerals  
for the Immune System**

## Protect your Health!

- ◆ A balanced and needs-oriented supply of nutrients keeps our body running
- ◆ In times of a higher demand of minerals, food supplements are a powerful tool to support the immune system and to protect our health
- ◆ The EFSA approved Health Claims for Zinc, Iron, Selenium und Copper contributing to the normal function of the immune system

## Use Conditions for Health Claims

- ◆ To use a Health Claim, the fortified product has to fulfill at least the conditions for the claim „Source of Minerals“
- ◆ **Source of Minerals:** A claim that a food is a source of minerals, and any claim likely to have the same meaning for the consumer, may only be made where the product contains at least a “significant amount” of minerals
- ◆ **Significant amount** of vitamins and minerals are according to Regulation (EU) No 1169/2011 on the provision of food information to consumers:
  - ◆ 15 % of the NRVs (nutrient reference values) supplied by 100 g or 100 ml in the case of products other than beverages
  - ◆ 7.5 % of the NRVs supplied by 100 ml in the case of beverages
  - ◆ 15 % of the NRVs per portion if the package contains only a single portion

# Health Claims - Overview



Health Claims	Overview Art. 13(1) Health Claims*														
	Fe	Ca	Ca & Vit. D	Mg	Zn	K	P	Se	I	F	Cu	Mn	Cr	Mo	Chloride(except Na)
Acid-base metabolism					✓										
Blood clotting		✓													
Blood glucose levels													✓		
Blood pressure						✓									
Bones		✓		✓	✓		✓					✓			
Cell division	✓			✓	✓										
Cell membranes							✓								
Cell protection from oxidative stress					✓			✓			✓	✓			
Cell division & specialisation		✓													
Cognitive function	✓				✓				✓						
Connective tissues											✓	✓			
Digestion															✓
Digestive enzymes		✓													
DNA synthesis					✓										
Electrolyte balance				✓	✓										
Energy-yielding metabolism	✓	✓		✓			✓		✓		✓	✓			
Fertility & reproduction					✓										
Formation of red blood cells / haemoglobin	✓														
Hair					✓			✓							
Immune system	✓				✓			✓			✓				
Iron transport											✓				
Metabolism of carbohydrates					✓										
Metabolism of fatty acids					✓										
Metabolism of macronutrients					✓										
Metabolism of sulphur amino acids													✓	✓	
Metabolism of vitamin A					✓										
Muscle function		✓		✓		✓									
Neurotransmission		✓													
Nails					✓			✓							
Nervous system				✓		✓			✓		✓				
Oxygen transport	✓														
Protein synthesis				✓	✓										
Psychological function				✓											
Reduction of tiredness and fatigue	✓			✓											
Skin					✓				✓						
Skin / hair pigmentation											✓				
Spermatogenesis								✓							
Teeth		✓		✓			✓								
Testosterone levels					✓										
Thyroid function								✓							
Thyroid hormones & thyroid function									✓						
Tooth mineralisation										✓					
Vision					✓										
Overview Art. 14(1)(a) Reduction of disease risk claims and Art. 14(1)(b) claims referring to children's development and health**															
Loss of bone mineral / Reduction in the risk of bone fracture in postmenopausal women		✓	✓												
Cognitive development of children	✓														
Growth and development of bone in children		✓	✓				✓								
Growth of children									✓						

\* Commission Regulation (EU) No 432/2012 establishing a list of permitted health claims made on food, other than those referring to the reduction of disease risk and to children's development and health

\*\* Authorised by EFSA according to 1924/2006/EC but not listed in community list, yet.

## Health Claims – Immune System

- ◆ **Copper** contributes to the normal function of the immune system
- ◆ **Selenium** contributes to the normal function of the immune system
- ◆ **Zinc** contributes to the normal function of the immune system
- ◆ **Iron** contributes to the normal function of the immune system

# Iron Salts permitted for Food Supplements

Mineral	Assay Fe (II) or Fe (III)	Solubility	pH Value	Taste
Ferrous Bisglycinate	approx. 20%	-	approx. 8	metallic, astringent
Ferrous Carbonate	approx. 10%	-	approx. 5	neutral
Ferrous Citrate	approx. 21%	-	approx. 4	slightly metallic
Ferrous Fumarate	approx. 32%	--	approx. 5	metallic
Ferrous Phosphate	approx. 16%	--	approx. 7	slightly metallic
Ferric Sodium Diphosphate	approx. 16%	--	approx. 8	salty
Ferric Pyrophosphate	approx. 21% / 25%	--	approx. 4	slightly metallic & astringent
Iron powder, carbonylic / electrolytic / reduced	min. 99% Fe	--	approx. 6	neutral

++ > 100 g/l | + 10 - 100 g/l | - 1 - 10 g/l | -- < 1 g/l \*The solubility specified here was measured in water. The solubility is influenced by many factors in the application.

# Iron Salts permitted for Food Supplements

Mineral	Assay Fe (II) or Fe (III)	Solubility	pH Value	Taste
Ferric Ammonium Citrate green / brown	approx. 14-16% / 16-22%	+	approx. 7	slightly metallic & sweet
Ferrous Gluconate	approx. 11.5%	++	approx. 5	metallic & sweet
Ferric Sodium EDTA	approx. 13%	+	approx. 5	slightly salty & sweet, sour
Ferrous Lactate	approx. 20%	+	approx. 5	metallic & sweet
Ferrous Saccharate	3 - 35%	++	approx. 7	metallic & sweet
Ferrous Sulphate 7-hydr. / dried	approx. 20% / 32%	++	approx. 4	metallic, astringent, bitter

++ > 100 g/l | + 10 - 100 g/l | - 1 - 10 g/l | --- < 1 g/l \*The solubility specified here was measured in water. The solubility is influenced by many factors in the application.

# Zinc Salts permitted for Food Supplements

Mineral	Assay Zn	Solubility	pH	Taste
Zinc Carbonate	approx. 58%	--	approx. 8	neutral
Zinc Citrate	approx. 31%	-	approx. 6	neutral
Zinc Malate	approx. 26%	--	approx. 6	neutral
Zinc Oxide	approx. 80%	--	approx. 7.5	neutral
Zinc Acetate 2-hydrate	approx. 30%	++	approx. 7	astringent, bitter
Zinc L-Ascorbate	approx. 15.5%	++	approx. 6-7	slightly astringent
Zinc L-Aspartate	approx. 20%	+	approx. 5	slightly sweet & astringent
Zinc Bisglycinate	approx. 27%	+	approx. 8	slightly sweet & astringent
Zinc Gluconate	approx. 13.5%	+	approx. 6	neutral
Zinc Lactate 3-hydr. / 2-hydr.	approx. 21.5% / 23%	+	approx. 9	slightly sour & salty, bitter
Zinc Sulphate 1-hydr. / 7-hydr.	approx. 36.5%	++	approx. 6	bitter

++ > 100 g/l | + 10 - 100 g/l | - 1 - 10 g/l | -- < 1 g/l \*The solubility specified here was measured in water. The solubility is influenced by many factors in the application.



## Copper Salts permitted for Food Supplements

Mineral	Assay Cu	Solubility	pH
Copper Bisglycinate	approx. 30%	-	approx. 7-9
Cupric Carbonate	approx. 55 %	- -	
Cupric Citrate 2.5 -hydrate	approx. 35 %	- -	approx. 6
Cupric Gluconate	approx. 14 %	+ +	approx. 4
Cupric Sulfate, anhydrous	approx. 40 %	+ +	approx. 4
Cupric Sulfate 1-hydrate	approx. 35 %	+ +	approx. 3.5
Cupric Sulfate 5-hydrate	approx. 25.5 %	+ +	approx. 4

++ > 100 g/l | + 10 - 100 g/l | - 1 - 10 g/l | --- < 1 g/l \*The solubility specified here was measured in water. The solubility is influenced by many factors in the application.

## Selenium Salts permitted for Food Supplements



Mineral	Assay Se	Solubility	pH
Sodium Selenite anhydrous	approx. 45.5 %	+ +	approx. 9
Sodium Selenite in Sodium Citrate	approx. 0.39 – 0.45 %	+ +	approx. 8
Sodium Selenite in Calcium Carbonate	approx. 0.432 %	- - (due to carrier)	approx.10

++ > 100 g/l | + 10 - 100 g/l | - 1 - 10 g/l | -- < 1 g/l \*The solubility specified here was measured in water. The solubility is influenced by many factors in the application.



# Suitable Product Qualities for Food Supplements

Dosage form	Product quality	Water solubility	Taste
Pills	<ul style="list-style-type: none"> <li>◆ Powder</li> <li>◆ Granulates</li> <li>◆ DC granulates</li> </ul>	not applicable	not applicable
Effervescent tablets	<ul style="list-style-type: none"> <li>◆ Powder</li> <li>◆ Granulates</li> <li>◆ DC granulates</li> </ul>	good, rapid solubility	neutral or sweet/sour taste
Sachets	<ul style="list-style-type: none"> <li>◆ Micronized powder</li> <li>◆ Fine powder</li> <li>◆ Powder</li> <li>◆ Crystalline products</li> <li>◆ Granulates</li> </ul>	good, rapid solubility	neutral or sweet/sour taste
Powder sticks for direct consumption	<ul style="list-style-type: none"> <li>◆ Micronized powder</li> <li>◆ Fine powder</li> <li>◆ Powder</li> <li>◆ Crystalline products</li> <li>◆ Granulates</li> </ul>	not applicable	neutral or sweet/sour taste
Soft gelatin capsules	<ul style="list-style-type: none"> <li>◆ Micronized powder</li> <li>◆ Fine powder</li> <li>◆ High metal content</li> <li>◆ High density</li> </ul>	not applicable	not applicable
Hard gelatin capsules	<ul style="list-style-type: none"> <li>◆ All qualities</li> <li>◆ High metal content</li> <li>◆ High density</li> </ul>	not applicable	not applicable
Liquids	<ul style="list-style-type: none"> <li>◆ All qualities</li> </ul>	good, rapid solubility	neutral or sweet/sour taste

# Ideas from the Supplement Market

<b>Product Name</b>	Davitamon Junior 1 To 3 Multivitamins And Mineral Nutritional Supplement: 75 Melt Tablets With Strawberry Flavor		Sona Sugar Free Zinc Food Supplement: 24 Chewable Tablets	
<b>Company</b>	Davitamon		Sona Nutrition	
<b>Country</b>	Netherlands		Ireland	
<b>EventDate</b>	Dec 2019		Oct 2019	
<b>Ingredients</b>	Vitamin B1, vitamin B2, vitamin B3, vitamin B5, vitamin B6, vitamin B8, vitamin B11 (folic acid), vitamin B12, vitamin C, vitamin D3 (cholecalciferol), vitamin K, chromium, iodine, biotin, magnesium, manganese, molybdenum, selenium, iron, zinc, sweeteners, mannitol, sorbitol, sucralose, cornstarch, minerals, vitamins, flavor, firming agent: polyvinylpyrrolidone, anti caking agent: magnesium salts of fatty acids, coloring agent: carmine.	Bulking agents (maltodextrin, sorbitol), vitamin C (ascorbic acid, sodium ascorbate), hydroxypropyl methylcellulose, citrus bioflavonoids, zinc citrate, flavors (strawberry, vanilla), anti-caking agents (silicon dioxide, vegetable stearic acid, vegetable magnesium stearate), sweetener (sucralose), acerola.		



# Ideas from the Supplement Market

<b>Product Name</b>	Genius Nutrition Vitamin X5 Liquid With Orange Flavor		Neo Peques Vitazinc Food Supplement: 30 Gummies With Strawberry Flavor	
<b>Company</b>	Genius Nutrition		Neovital Health	
<b>Country</b>	Romania		Spain	
<b>EventDate</b>	Oct 2019		Jul 2019	
<b>Ingredients</b>	Vitamin A (palmitate - beta carotene), vitamin C (ascorbic acid), vitamin D3 (cholecalciferol), vitamin E (dl-alpha tocopheryl acetate), vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin), vitamin B6 (pyridoxine), vitamin B9 (folic acid), vitamin B12 (cyanocobalamin), vitamin B7 (biotin), vitamin B5 (pantothenic acid), vitamin K2, calcium (as gluconate and marine plant), magnesium (as gluconate), zinc (as gluconate), selenium (as sodium selenite), copper (as gluconate), manganese (as gluconate), chromium (as picolinate), iron (as ferrous gluconate), potassium (as citrate), iodine, 72 trace minerals (ocean vegetarian), choline l-bitatate, inositol, PABA, lutein, zeaxanthin, sport amino blend 1500mg: l-glycine, l-proline, l-alanine, l-hydroxypro-line, l-glutamic acid, l-arginine, l-aspartic acid, l-serine, l-lysine, l-leucine, l-valine, l-threonine, l-phenylalanine, l-isoleucine, l-hydroxylysine, l-methionine, l-histidine, l-tyrosine, l-cysteine, l-taurine, l-carnitine, l-glutamine, sport super green blend 75mg: ginseng panax C.A., meyer, alfalfa powder, broccoli powder lecithin, spirulina, green tea powder, grape seed powder, red beet powder, cranberry powder, goji berry powder, raspberry ketones, acerola cherry powder, bilberry fruit powder, acai powder, pomegranate powder, citrus bioflavonoids, lycopene powder, CoQ10, ginkgo biloba powder, aloe vera powder.	Glucose syrup, sugar, water, gelling agent (gelatin), bulking agent (dextrose), flavoring (strawberry flavor), moisturizer (sorbitol), acidifier (citric acid), ascorbic acid, zinc gluconate, dl-alpha-tocopheryl acetate, natural coloring (E120), pyridoxine HCl, retinyl acetate, folic acid, biotin, cyanocobalamin, cholecalciferol.		

# Ideas from the Supplement Market

<b>Product Name</b>	Itsme Now Immun Complex: Immune Complex Dietary Supplement, 120 Capsules		Vita Icepod Multivitamin Supplement	
<b>Company</b>	Die Nems		Bottega Verde	
<b>Country</b>	Germany		Italy	
<b>EventDate</b>	Jul 2019		Jun 2019	
<b>Ingredients</b>	Microcrystalline cellulose, zinc gluconate, rice bran extract, chromium picolinate, sodium selenite.	Water, fructose, succodi elderberry, rosa canina fruits titrated 50% in vitamin C (rosa canina l, maltodextrin), zinc gluconate, nicotinamide (niacin), calcium pantothenate (acidopantothenic), pyridoxine chlorohydrate (vitamin B6), thiamine chlorohydrate (vitamin B1), riboflavin 5'-phosphatosalodic (vitamin B2), biotin, cyanocobalamin (vitamin B12), preservatives: potassium sorbate, sodium benzoate, acidifier: citric acid, flavors, sweetener: sucralose.		

# Ideas from the Supplement Market

<b>Product Name</b>	Vimergy Zinc Dietary Supplement		Vitspritz Adult Multivitamin Food Supplement Oral Spray: Orange Flavor	
<b>Company</b>	Vimergy		Mijo Healthcare	
<b>Country</b>	Netherlands		United Kingdom	
<b>EventDate</b>	Jan 2020		Mar 2019	
<b>Ingredients</b>	Zinc (as zinc sulfate), other ingredients: organic glycerin, purified water.	Water, sorbitol, sodium ascorbate, flavoring, nicotinamide, calcium d-pantothenate, cholecalciferol, riboflavin-5-phosphate, retinal acetate, phytomenadione, acidity regulators (citric acid, trisodium citrate), pyridoxine hydrochloride, thiamine mononitrate, folic acid, preservative (potassium sorbate), thickener (xanthan gum), potassium iodide, sodium selenite, sweetener (sucralose), d-biotin, cyanocobalamin.		



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