

Skin and Hair Supplements

DR. mohebi

Biotin

- **Important factor in metabolism of amino acids and carbohydrates**
- **Biotin deficiency is rare**
- **It is found in various foods**
 - **Liver**
 - **Salmon**
 - **Carrots**
 - **Yeast**
 - **Soy flour**
 - **Bananas**
- **Reduced by cooking or preserving of the food**

Biotin

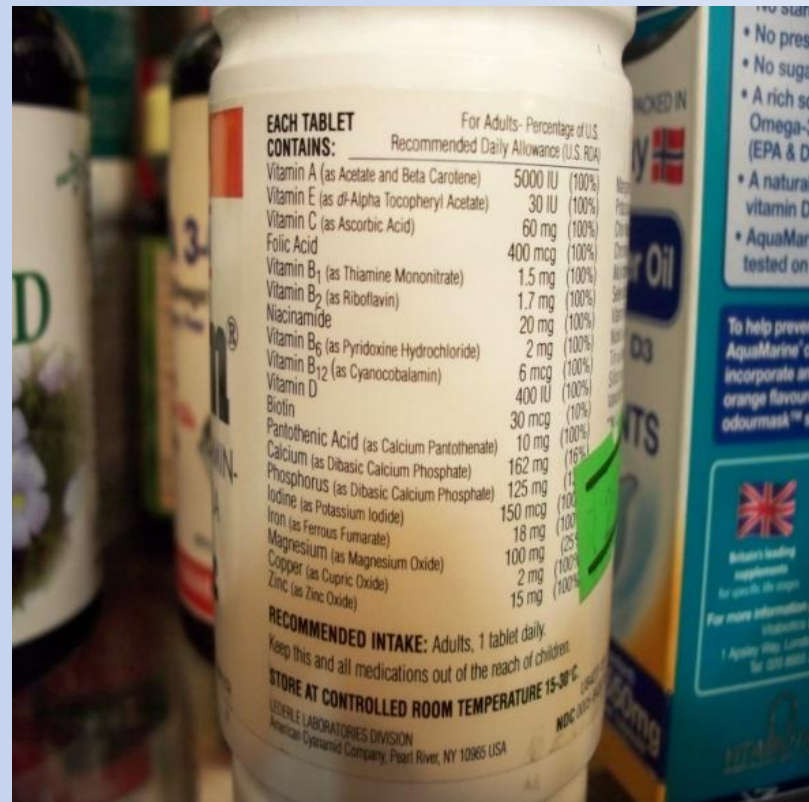
- **Biotin deficiency**
 - **Skin rash**
 - **Hair loss**
 - **Fragile nails**
- **Conditions which increase person's need to supplemental biotin**
 - **Genetic disorder of biotin deficiency**
 - **Gastric bypass surgery**

Biotin

- **Anti acne properties of biotin**
 - **It is NOT proven by studies**
- **RDA for biotin in adults**
 - **300 mcg per day to prevent deficiency**
 - **Up to 10 mg per day is tolerable if used to treat deficiency per physician recommendation**

Biotin

- **Centrum**
 - 30 mcg
- **Centrum silver**
 - 30 mcg
- **Pharmaton**
 - 150 mcg
- **Zinc plus**
 - 60 mcg



Biotin

- Stress formula
 - 45 mcg
- Super B complex (Nature Made)
 - 30 mcg
- Rigendiet
 - 50 mcg
- Ecophane
 - 150 mcg



	Pour 100 g de produit	Pour 2 comprimés	AJR**
Hydrolysats de protéines	52 g	1200 mg	
Cystine*	4 g	92 mg	
Méthionine*	5,1 g	118 mg	
Spiruline	565 mg	13 mg	
Vitamine B5	260 mg	6 mg	100%
Vitamine B6	87 mg	2 mg	100%
Biotine (B8)	6,5 mg	0,15 mg	100%
Vitamine PP	783 mg	18 mg	100%
Zinc	652 mg	15 mg	100%
Magnésium	869 mg	20 mg	6,6%
Analyse nutritionnelle			
Protides	47 g	1,1 g	
Glucides	33 g	0,74 g	
Lipides	3,4 g	0,08 g	
Valeur énergétique			
Kcal	348	8	
Kj	1456	34	

Faible pouvoir calorique : 8 Kcal

Folic Acid

- Water soluble vitamin B
- Leafy green vegetable, rice , variable fruits
- Prominent to maintain new cells
- Possible role to promote skin and hair health
- RDA for folic acid in adults is 400 mcg per day
- Medical conditions that increase the need
 - Pregnancy
 - Alcohol abuse
 - Kidney dialysis
 - Liver disease
 - Certain anemias

Folic Acid

- **Medications that increase the need**
 - **Phenytoin**
 - **Primidone**
 - **Barbiturates**
 - **Methotrexate**
 - **Alcohol**
- **Cooking may destroy folate content of the food**

Folic Acid

- Pharmaton
 - 100 mcg
- Centrum
 - 400 mcg
- Centrum silver
 - 400 mcg
- Multi Daily
 - 400 mcg



Folic Acid

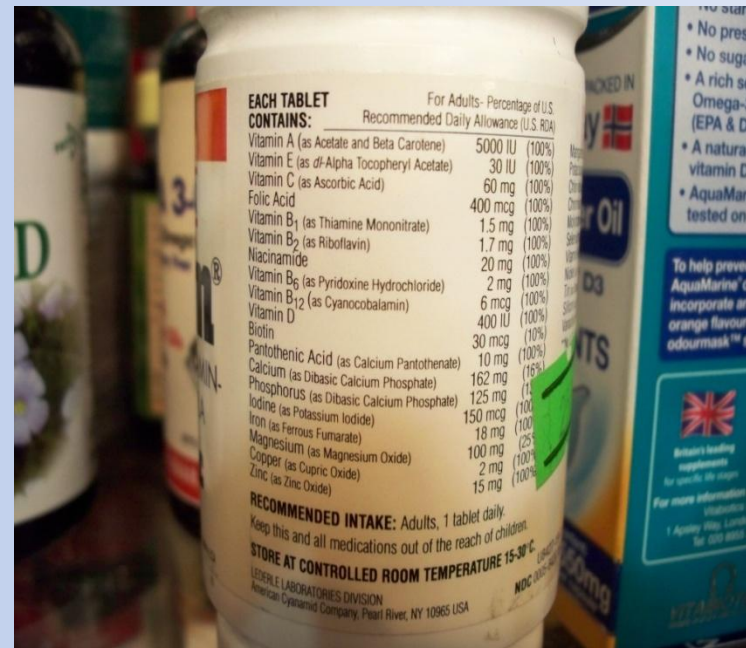
- Vitamin for hair
 - 400 mcg
- RigenDiet
 - 300 mcg
- **Stress formula**
 - **400 mcg**



Supplement Facts		
Serving Size 1 Tablet		
Servings per Container 100		
Amount Per Tablet		% Daily Value
Vitamin C	600 mg	833%
Vitamin E	30 IU	100%
Vitamin B-1	15 mg	1,000%
Vitamin B-2	10 mg	588%
Niacin	30 mg	150%
Vitamin B-6	5 mg	250%
Folic Acid	400 mcg	100%
Vitamin B-12	12 mcg	200%
Biotin	45 mcg	15%
Pantothenic Acid	20 mg	200%
Calcium	40 mg	4%
Zinc	23.9 mg	159%
Copper	3 mg	150%
Sodium	less than 5 mg	

Folic Acid

- Absorption from the proximal part of the small intestine
 - Need supplements in patients with IBD
 - Upper limit of 1 mg
 - Up to 3-5mg used per Individualizing needs



Pantothenic Acid

Vitamin B5

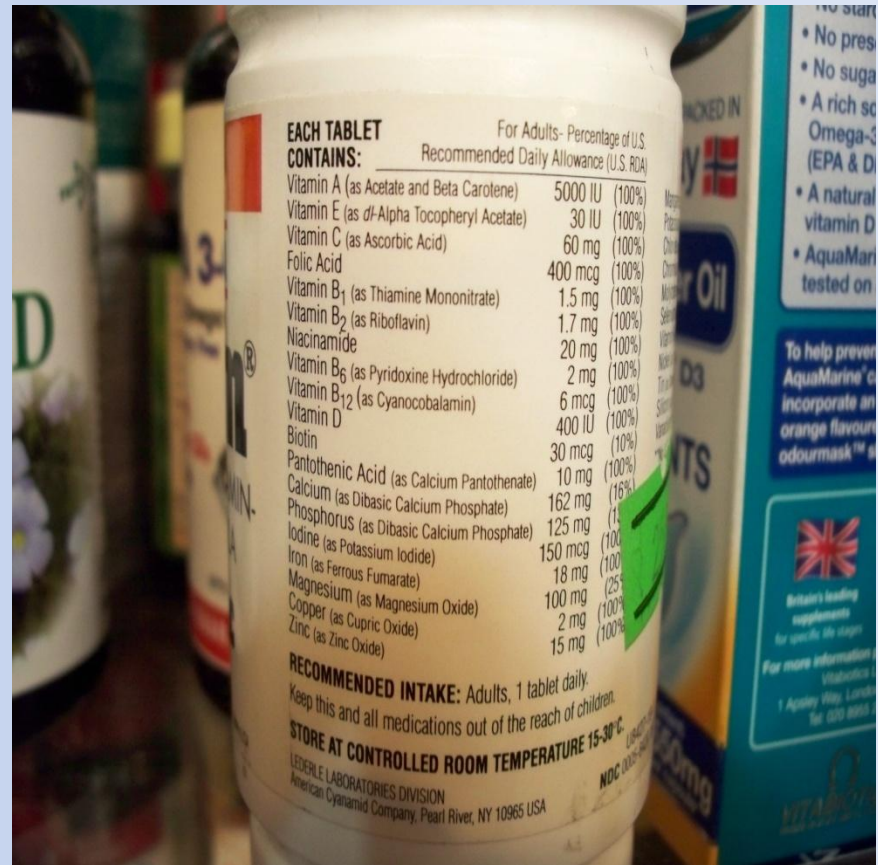
- **Possible role in hair growth**
- **Co-enzyme for many metabolic reactions involving proteins, carbohydrates and cholesterol**
- **RDA for pantothenic acid in adults is 10 mg per day**
- **Deficiency is extremely rare, only in people with severe malnutrition**

Niacin (Vitamin B3)

- **Involved in carbohydrates, lipoids and proteins metabolism**
- **Participates in NAD, NADPH synthesis and energy generating reactions**
- **Promotes healthy skin and hair**
- **RDA for niacin in adults is 20 mg per day**
- **Inositol hexanicothinate is the most tolerable form of niacin**
- **It may possess some anti-aging effects on skin**

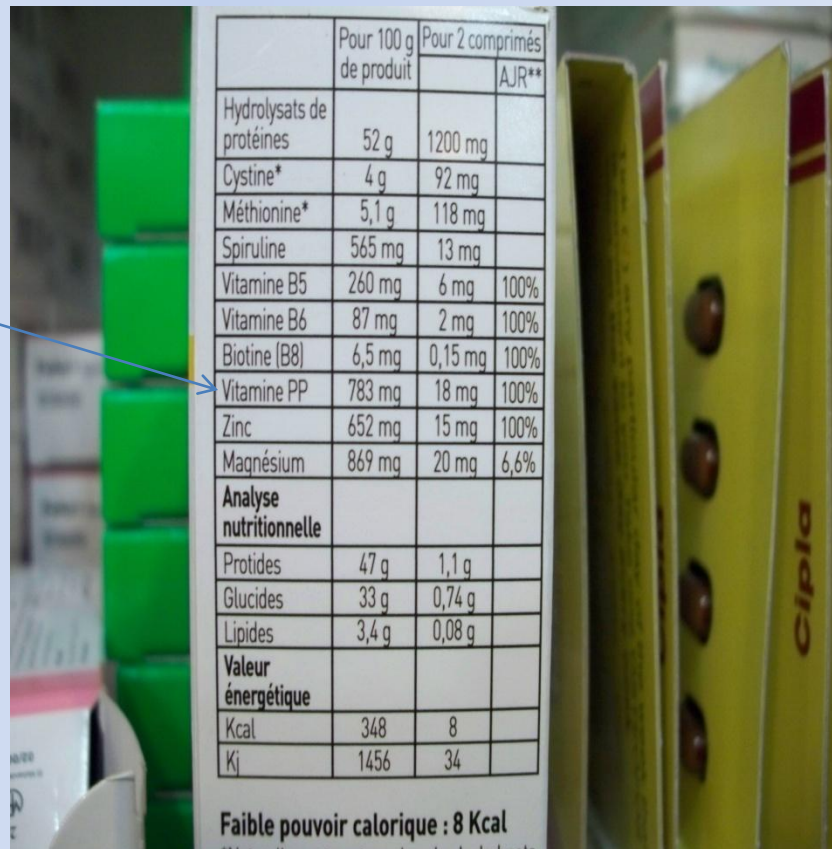
Niacin (Vitamin B3) (PP)

- **Centrum**
 - 20 mg
- **Centrum silver**
 - 20mg
- **Pharmaton**
 - 18mg
- **Multi Daily**
 - 20 mg



Niacin (Vitamin B3)

- Vitamins for hair
 - 35 mg
- **Echophane**
 - **18 mg**
- Possible vaso-dilator effects
 - Hair growth



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Valeur énergétique			
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**Ajustement des valeurs nutritionnelles par rapport aux hydrolysats

Vitamin B6

Pyridoxine

- **Involved in amino acid metabolism and gluconeogenesis**
- **Possibly enhances the circulation and promotes hair growth**
- **Food sources**
 - **Bananas**
 - **Meats**
 - **Vegetables nuts**
- **Absorption in jejunum and ileum**
- **RDA for pyridoxine in adults is 2mg per day**

Pyridoxine (content in Ecophane®)

	Pour 100 g de produit	Pour 2 comprimés	AJR**
Hydrolysats de protéines	52 g	1200 mg	
Cystine*	4 g	92 mg	
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Spiruline	565 mg	13 mg	
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Faible pouvoir calorique : 8 Kcal			

Vitamin C

Ascorbic Acid

- **Anti oxidant effects**
- **Increases the absorption of iron**
- **Citrus fruits, vegetables, strawberry, pine apple, kiwi, green and red pepper**
- **Promotes healthy skin**
- **Vitamin C deficiency**
 - **Dry and scaly skin**
 - **Dry hair**
- **Increased needs in smokers**
- **RDA for Vit C in adults is 60 mg per day**
- **Doses up to 2000mg is considered safe**
- **Most multivitamin brands have at least 60 mg of Vit C**

Zinc

	Pour 100 g de produit	Pour 2 comprimés	AJR**
Hydrolysats de protéines	52 g	1200 mg	
Cystine*	4 g	92 mg	
Méthionine*	5,1 g	118 mg	
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Ecophane

Zinc

Nahrungsergänzungsmittel
mit Zink und Vitaminen

Zink plus

Verzehrempfehlung:
Täglich 1 Kapsel mit etwas Flüssigkeit (z.B. 1/2 Glas Wasser) verzehren.

Nährwertangaben	pro 100g	pro Kapsel
Brennwert	2567 kJ 619 kcal	11,6 kJ 2,8 kcal
Eiweiß	29g	0,13g
Kohlenhydrate	2g	0,01g
Fett	53g	0,24g
Broteinheiten	0,2g	<0,001

Gehaltsangaben	pro Kapsel	Prozent der empf. Tagesdosis*
Zink	5,0 mg	50%
Vitamin B1	1,3 mg	118%
Vitamin B2	1,5 mg	107%
Vitamin B6	1,6 mg	114%
Vitamin B12	3,0 µg	120%
Biotin	60,0 µg	120%
Folsäure	200,0 µg	100%
Niacin	9,0 mg	56%
Pantothensäure	6,0 mg	100%

* nach Nährwert-Kennzeichnungsrichtlinie.

Zinc



Composition per capsule	
Concentrated, standardized	
Ginseng Extract G115	40.0 mg
(made from roots of	
<i>Panax Ginseng</i> C.A. Meyer)	
Dimethylaminoethanol	
bitartrate PHARMATON	26.0 mg
Vitamin A	4000 IU
Vitamin B1	2.0 mg
Vitamin B2	2.0 mg
Vitamin B6	1.0 mg
Vitamin B12	1.0 mcg
Vitamin C	60.0 mg
Vitamin D	400 IU
Vitamin E	10.0 mg
Nicotinamide (PP)	15.0 mg
Calcium pantothenate	10.0 mg
Rutin	20.0 mg
Iron	10.0 mg
Calcium	90.3 mg
Phosphorus	70.0 mg
Fluorine	0.2 mg
Copper	1.0 mg
Potassium	8.0 mg
Manganese	1.0 mg
Magnesium	10.0 mg
Zinc	1.0 mg
Choline, inositol, linoleic	
acid and linolenic acid	66.0 mg

Pharmaton

Zinc

- Promotes wound healing, skin and mucosal integrity
- RDA for zinc in adults is 15 mg per day as elemental zinc
- Try to take this supplement apart from quinolone antibiotics and tetracyclines since it decreases their absorption



Nutrients' intake		in 1 tablet	in 100 g	% RDA in 1 tablet
Vitamins ar amino (Biotin), kin, hair	D,L-Methionine	250,00 mg	33,33 g	
	L-Cystine	50,00 mg	6,67 g	
	Pantothenic ac.(Vit. B5)	9,00 mg	1,2 g	150
	Vitamin E	7,50 mg	1,0 g	75
	Zinc	7,50 mg	1,0 g	50
	Vitamin B6	2,00 mg	0,27 g	100
	Copper	1,00 mg	0,135 g	
	Folic acid	300,00 mcg	0,04 g	150
	Selenium	50,00 mcg	0,0067 g	
	D-Biotin	50,00 mcg	0,0067 g	33,33

RDA : Recommended Daily Allowance

FOOD SUPPLEMENT - IT IS NOT A MEDICINE

Iron

- In anemic states or malabsorption
- Iron supplements in multivitamin-multimineral or extra doses of iron may prevent hair loss
 - RDA
 - 19-50 yo male 8mg/day, female 18mg/day
 - Over 50 yo 8mg/day
 - Deficiency
 - Ferrous sulfate (20% elemental) 300mg BID or TID daily (60mg elemental iron in each dose),
 - monitor the levels, Hb

Iron

- **Apart from calcium supplements if possible**
- **Not taking with tea or coffee**
- **Vitamin C increases the absorption**
- **Patients with gastric bypass surgery may need more**

Iron

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Vitamin B6	1.0 mg
Vitamin B12	1.0 mcg
Vitamin C	60.0 mg
Vitamin D	400 IU
Vitamin E	10.0 mg
Nicotinamide (PP)	15.0 mg
Calcium pantothenate	10.0 mg
Rutin	20.0 mg
Iron	10.0 mg
Calcium	90.3 mg
Phosphorus	70.0 mg
Fluorine	0.2 mg
Copper	1.0 mg
Potassium	8.0 mg
Manganese	1.0 mg
Magnesium	10.0 mg
Zinc	1.0 mg
Choline, inositol, linoleic	
acid and linolenic acid	66.0 mg

Pharmaton

Supplement Facts		
Serving Size 1 Tablet		
Amount Per Serving	%Daily Value	
Niacin	35 mg	175%
Folic Acid	400 mcg	100%
Vitamin B-12 (as Cyanocobalamin)	6 mcg	100%
Pantothenic Acid (as d-Calcium Pantothenate)	100 mg	
Iron (as Ferrous Sulfate)	15 mg	83%
Iodine (from Kelp)	150 mcg	100%
Zinc (as Zinc Gluconate)	15 mg	100%
Copper (as Copper Gluconate)	2 mg	100%
Manganese (as Manganese Gluconate)	5 mg	250%
Sodium	5 mg	<1%
PABA (Para-Aminobenzoic Acid)	30 mg	*
Choline Bitartrate	125 mg	*
Inositol	50 mg	*
Isolated Soy Protein	100 mg	*
Brewer's Yeast	5 mg	*
*Daily Value not established.		

Vitamins for Hair

Iron

EACH TABLET CONTAINS:

		For Adults- Percentage of U.S. Recommended Daily Allowance (U.S. RDA)
Vitamin A (as Acetate and Beta Carotene)	5000 IU	(100%)
Vitamin E (as d-Alpha Tocopheryl Acetate)	30 IU	(100%)
Vitamin C (as Ascorbic Acid)	60 mg	(100%)
Folic Acid	400 mcg	(100%)
Vitamin B ₁ (as Thiamine Mononitrate)	1.5 mg	(100%)
Vitamin B ₂ (as Riboflavin)	1.7 mg	(100%)
Niacinamide	20 mg	(100%)
Vitamin B ₆ (as Pyridoxine Hydrochloride)	2 mg	(100%)
Vitamin B ₁₂ (as Cyanocobalamin)	6 mcg	(100%)
Vitamin D	400 IU	(100%)
Biotin	30 mcg	(10%)
Pantothenic Acid (as Calcium Pantothenate)	10 mg	(16%)
Calcium (as Dibasic Calcium Phosphate)	162 mg	(16%)
Phosphorus (as Dibasic Calcium Phosphate)	125 mg	(16%)
Iodine (as Potassium Iodide)	150 mcg	(100%)
Iron (as Ferrous Fumarate)	18 mg	(25%)
Magnesium (as Magnesium Oxide)	100 mg	(100%)
Copper (as Cupric Oxide)	2 mg	(100%)
Zinc (as Zinc Oxide)	15 mg	(100%)

RECOMMENDED INTAKE: Adults, 1 tablet daily.
Keep this and all medications out of the reach of children.

STORE AT CONTROLLED ROOM TEMPERATURE 15-30°C.

LEDERLE LABORATORIES DIVISION
American Cyanamid Company, Pearl River, NY 10965 USA

NDC 0005-5400-01

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Oil

D3

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To help prevent
AquaMarine®
incorporate an
orange flavour
odourmask™

For more information
Vitabiotics Ltd
1 Agley Way, London
Tel: 020 8955 1

Centrum

Methionine

- **Methionine is essential for the formation of healthy collagen used to form skin, nails, and connective tissue**
- **Antioxidant properties**
- **Precursor for biosynthesis of cysteine and taurine**

Methionine

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Ecophane

Methionine

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L-Cystine	50,00 mg	6,67	g				
Pantothenic ac.(Vit. B5)	9,00 mg	1,2	g			150	
Vitamin E	7,50 mg	1,0	g			75	
Zinc	7,50 mg	1,0	g			50	
Vitamin B6	2,00 mg	0,27	g			100	
Copper	1,00 mg	0,135	g				
Folic acid	300,00 mcg	0,04	g			150	
Selenium	50,00 mcg	0,0067	g				
D-Biotin	50,00 mcg	0,0067	g			33,33	

RDA : Recommended Daily Allowance

FOOD SUPPLEMENT - IT IS NOT A MEDICINE

Supplements in Bone and Joint Health

Calcium Supplements

- **Most abundant mineral in the body**
- **1% to 2% of the body weight**
- **99% stored in bones**
- **The majority of adult bone mass forms by age 18 in girls and 20 in boys**
- **Needs with different ages**
 - **9-18 yo 1300 mg**
 - **19-50 yo 1000 mg**
 - **51+ yo 1200 mg**
(elemental calcium)

Calcium Supplements

- **Foods rich in oxalic acid interfere with calcium absorption**
 - **Spinach**
 - **Beans**
- **Need to consume variety of calcium rich foods throughout the day**
- **Most efficient absorption when take 500 mg elemental calcium**
- **Divide higher doses in 2 to 3 times/day**
- **Most individuals can easily get at least half of the calcium they need from food**

Calcium Supplements

- **Different salts of calcium**
 - **Calcium carbonate (Highest amount of elemental calcium)**
 - **Calcium phosphate**
 - **Calcium lactate**
 - **Calcium citrate**
 - **Calcium gluconate (lowest amount of elemental calcium)**
- **Older patients with lower gastric acidity or patients on antacids, PPIs or H2 blockers have better absorption of citrate salt**

Calcium Supplements

- **Drug-drug interactions**
 - **Co-trimoxazole**
 - **Fluoroquinolones**
 - **Cipro**
 - **Moxi**
 - **Levo**
 - **Tetracycline family**
 - **Levothyroxine**
 - **Digoxin**
 - **Phenytoin**
 - **Iron**

Calcium Supplements

- **May cause**
 - **Gas**
 - **Bloating**
 - **Constipation**
- **Spread out the supplemental doses reduces these adverse effects**
- **Drink plenty of water and other liquids**
- **Some Ca supplements also contain Boron since some small studies showed cartilage repairing effects of this element**

Vitamin D Supplements

- **Two forms**
 - Ergocalciferol (fungal and plant source) D2
 - Cholecalciferol (made in the skin) D3
- **1st conversion occurs in liver to calcidiol**
- **2nd conversion occurs in kidney to calcitriol**
 - 1,25 dihydroxy Vitamin D
 - 24,25 dihydroxy Vitamin D
- **Vitamin D stores decreases with**
 - Age
 - Winter season
 - Liver insufficiency
 - Renal insufficiency
 - Malabsorption

- No salt or yeast
- No artificial colours
- Osteocare® is not tested on animals

FOR BONE
HEALTH

Nutritional Information	Av. per 2 x 5ml	% RDA*
Calcium	300 mg	38
Magnesium	150 mg	50
Zinc	6 mg	40
Vitamin D (150 IU)	3.8 µg	76

*RDA - Recommended Daily Allowance
µg - microgram, mg - milligram, IU - International Units

روش و مقدار مصرف : برای کودکان ۱-۲ سال روزی ۲ بار
هر بار ۱ قاشق مربا خوری
برای کودکان ۲-۳ سال روزی ۳-۲ بار هر بار ۱ قاشق مربا خوری
برای بزرگسالان : روزی ۲ بار هر بار ۲ قاشق مربا خوری
در بارداری و شیر دهی روزی دو بار هر بار ۲ قاشق مربا خوری
احتیاط : بیش از مقدار تجویز مصرف نشود .
نام وارد کننده : **شرکت شفا یاب گستر**
شماره ثبت : ۱۲۲۰۴۰۰۰۰۰۰۰۰
شرایط نگهداری : در جای خنک و دور از دسترس اطفال نگهداری شود .

Vitamin D Supplements

- **Measuring serum levels**
 - 25-hydroxyvitamin D (25OHD)
 - 30-40 ng/ml (70-99 nmol/l)
- **Vitamin D insufficiency**
 - 25OHD 20-30 ng/ml (50-75 nmol/l)
- **Vitamin D deficiency**
 - 25OHD less than 20 ng/ml (50 nmol/l)
- **Patients with Vitamin D insufficiency**
 - Relative hypocalcaemia
 - High serum PTH

Vitamin D Supplements

- **Vitamin D insufficiency**
 - **Reduced intestinal absorption of calcium**
 - **Increased PTH levels**
 - **Increased bone resorption**

Vitamin D Supplements

- Each 40 units of Vitamin D elevates the 25OHD levels by about 0.4 ng/ml (1 nmol/l)
- Cumulative dose
 - 1500 units/day
 - 10500 units/week
 - 45000 units/month
- Result the same rise in 25OHD levels after the same period of consumption

Vitamin D Supplements

- **Initial treatment in vitamin D deficiency**
 - 50,000 IU D2 or D3 weekly for 1-2 months
 - Then 800 to 1000 IU daily
 - Another option: 300,000 IU twice yearly
- **In malabsorptive states**
 - 10,000 to 50,000 IU daily may be necessary
- **25OHD to be monitored 3 months after the initiation of supplement intake**

Vitamin D

- **Patients with hepatic insufficiency**
 - Calcidiol
- **Patients with renal insufficiency**
 - Calcitriol
- **For most adults, 800- 1000 IU per day of D2 or D3**
- **Major signs of overdose:**
 - Hypercalcaemia
 - Hypercalciuria
 - 25OHD above 88 ng/ml (220 nmol/l)

Vitamin D Supplements

- **Each microgram of D2 or D3 is equivalent to 40 IU**
- **In healthy adults, overt intake of 1250 mcg/day (50,000 IU/day) may produce toxicity after several months**
- **There is a 12 to 24 hours time lag between vitamin D intake and onset of action due to the time needed for hepatic and renal metabolism to its most active form**

Magnesium Supplements

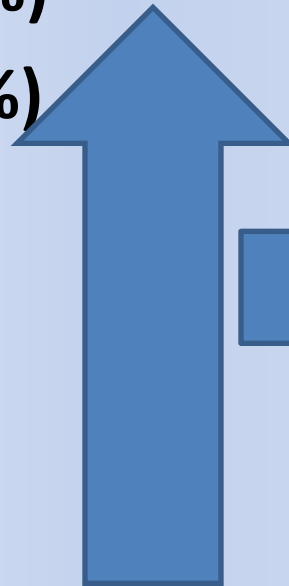
- **Approximately 50% of body Mg is found in bones.**
- **Mitogenic effects on osteoblasts.**
- **Mg depletion causes cellular growth inhibition.**
- **Ca maintain bone strength while Mg maintain its elasticity and prevention of injury**
- **Mg as a co-factor is involved in Vit D synthesis and calcium metabolism**
- **RDA for Mg**
 - **Adult male : 420 mg/day**
 - **Adult female: 320 mg/day**
- **Approximately 1/3 to ½ of Mg intake will be absorbed into the body.**

Magnesium Supplements

- **Certain medications results in low Mg levels**
 - **Lasix, Bumex**
 - **Hydrochlorothiazide**
 - **Cisplatin**
 - **Gentamicin**
 - **Amphotericin**
- **Mg supplements may be required in alcoholics**

Magnesium Supplements

- Different salts of Mg in oral supplements:
 - Mg oxide (60%)
 - Mg carbonate (45%)
 - Mg hydroxide (42%)
 - Mg citrate (16%)
 - Mg lactate (12%)
 - Mg chloride (12%)
 - Mg sulfate (10%)



Content of elemental Mg

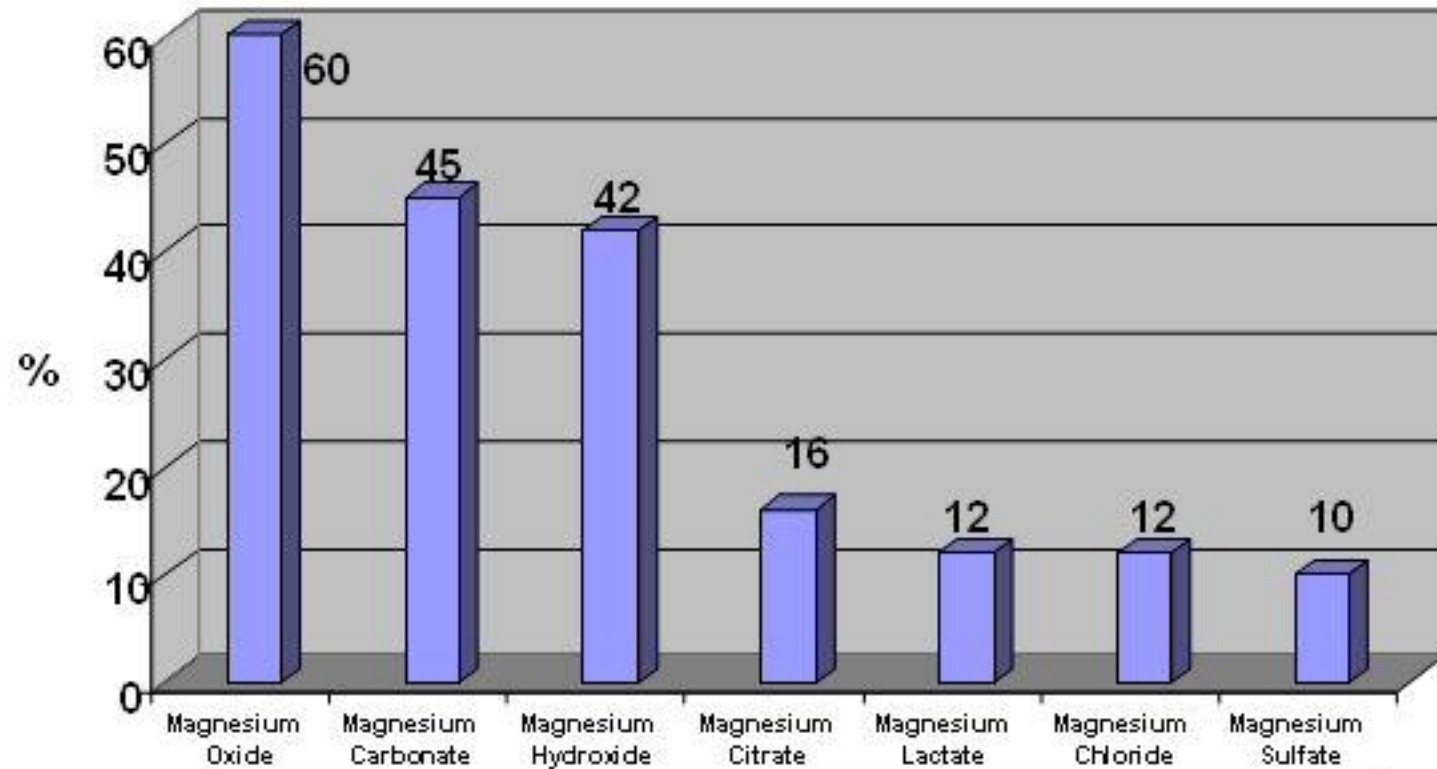


Figure 1: ■ Percent Magnesium content of oral supplements

Magnesium Supplements

- **Elemental Mg**
 - Mg oxide has the highest amount of elemental Mg
- **Bioavailability**
 - Bioavailability of Mg oxide is lower than Mg chloride and Mg lactate
- **Major adverse effect**
 - Diarrhea

Nutritional Information
Nährstoffangaben

	Avg. 2 x 5 ml	% of U.S. RDA
Calcium	500 mg	50
Magnesium	150 mg	38
Zinc	4 mg	27
Vitamin D	400 IU	100

RDA = Recommended Daily Allowance

IU = International Units mg = Milligram

محلول خوراکی کنسپکتر (مکمل غذایی - ۲۰۰ میلی لیٹر)

**Nutritional Information/
Nährstoffangaben**

	Av. per 2 tablets	% of U.S. RDA
Calcium	800 mg	80
Magnesium	200 mg	50
Zinc	8 mg	53
Vitamin D3	400 IU	100

RDA = Recommended Daily Allowance

IU = International Units mg = Milligram

**Inactive Ingredients/
Zusätzliche Inhaltsstoffe**

Starch, Microcrystalline
Cellulose, Dibasic Calcium
Phosphate, Polyvinyl
Pyrrolidone, Magnesium
Stearate, Purified
Sodium Starch Glycolate
(Type A), Tabcoat

Calcicare

قرص کلسیکر - ۳۰ عددی

(کلسیم + منیزیم + زینک + ویتامین D3)

Ingredients

Nutrition Facts Yes Serving Size : 1 Tablet

Amount Per Serving % Daily value* Vitamin D 200.0I.U.

Calcium 333.0mg Magnesium 133.0mg Zinc 5.0mg



کلسیم و ویتامین D
مکمل رژیم غذایی
20199 IRC
وزارت بهداشت و درمان
روشن و مقدار مصرف
روزانه دو تا سه بار بعد
از غذا با یک لیوان آب
احتیاط: در زمان بارداری
با مشورت پزشک مصرف
نمایند
این قرص را بعد از غذا میل
نمایند و با یک لیوان آب
در جای خشک و خنک و دور
دسترسی کودکان نگهداری
نمایند

also aid in nerve, muscle and metabolic functions. Zinc
processes. Vitamin D improves calcium absorption.
No Artificial Flavors • No Preservatives • No Yeast or
SUGGESTED USE: Take one tablet up to three times daily
Store in a cool, dry place, out of reach of children

Supplement Facts	
Serving Size 1 tablet	
Amount Per Tablet	% Daily Value
Vitamin D 200 I.U.	50%
Calcium 333 mg	33%
Magnesium 133 mg	33%
Zinc 5 mg	33%

Do not use if
or missing
INGREDIENTS
Oxide, Micro
Hydroxyprop
Silicon Dioxi
(artificial color
Glycol, Trieth
Starch, Vitami

Distributed by: **Nature Made Nutritional Products**
Mission Hills, CA 91346-9606, U.S.A.
1-800-276-2878 • www.NatureMade.com
in D Tablets

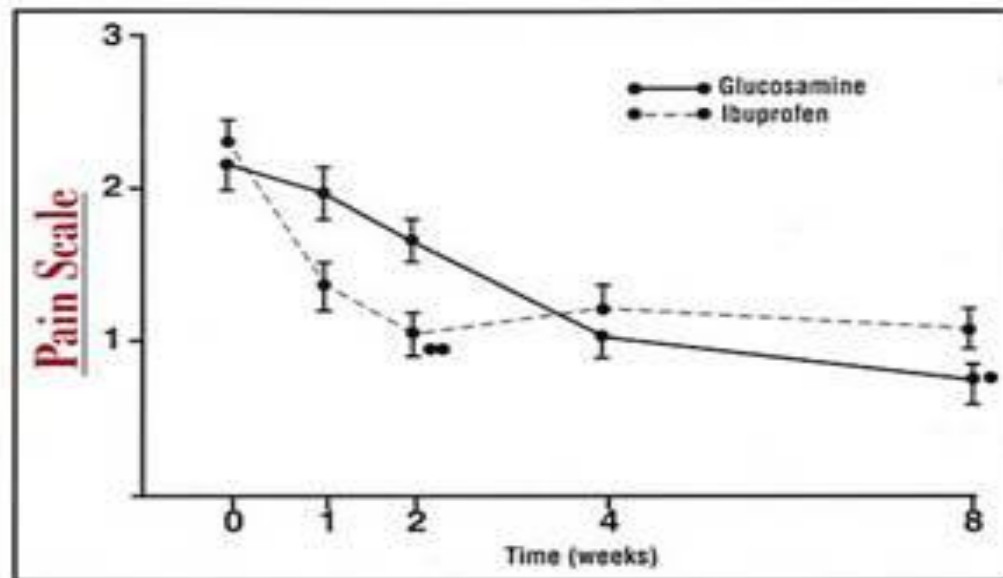
Glucosamine Supplements

- **Endogenous precursor for the aminoglycans found in synovial fluid and ligaments**
- **Exogenous glucosamine is derived from marine exoskeletons**
- **Anti-inflammatory effects**
- **Glucosamine sulfate is preferred over glucosamine HCL**

Glucosamine Supplements

- In trials comparing glucosamine sulfate with either acetaminophen or NSAIDs in reduction of osteoarthritis symptoms and pain, glucosamine had effective reduction in pain with fewer side effects compared to NSAIDs.**
- Results from glucosamine HCL with or without chondroitin is conflicting.**
- It is recommended to use glucosamine sulfate to reduce osteoarthritis symptoms and possibly slowing disease progression.**

Changes in pain score during the trial period.



Glucosamine Supplements

- **Regarding concerns of having shellfish allergy**
 - **Most allergic people have reactions to the meat of shellfish not the exoskeleton**
 - **No report of reactions in persons with shellfish allergy who takes glucosamine**
- **No significant increase in A1C in patients with type 2 DM based on clinical studies**
- **Dose**
 - **1500 mg PO once daily**
 - **500 mg PO three times a day (less GI intolerance)**

Chondroitin

- Endogenous glycosaminoglycan
- Often derived from bovine cartilage
- Inconsistent results from clinical studies
- Symptomatic benefit of chondroitin is minimal
- Routine use of this agent in practice is generally discouraged
- Dose
 - 200 mg to 400 mg PO two or three times a day
- Combination of glucosamine-chondroitin NO better than glucosamine alone

MethylSulfonylMethane (MSM)

- **Clinical trials showed modest reduction in pain and swelling but no reduction in joint stiffness**
- **No significant adverse effect reported**
- **Overall not strongly recommended due to insufficient evidence**
- **Dose**
 - **1500 mg to 3000 mg daily in divided doses**
 - **Usually in combination with glucosamine and chondroitin**

S-adenosylmethionine (SAMe)

- **Clinical trials showed reduction in arthritis pain**
 - **Increases chondrocytes**
 - **Decreases inflammatory cytokines**
- **Potential interactions with serotonergic drugs**
- **There is a time lag of 6-8 weeks before seeing the results**
- **Increases serotonin, norepinephrine and dopamine levels**
- **Expensive**
- **Dose**
 - **200 mg PO three times a day**