TORGA™

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SUPPLEMENT FACTS

Each drop contains:

Vitamin A ..... 2666 IU (as Retinol)

DESCRIPTION

TORGA DROPS contain Vitamin A, a fat-soluble Vitamin (as Retinol). Retinol is found in foods from animal sources, including dairy products, fish, meat, liver and is also available as a dietary supplement. Retinol is metabolized intracellularly via oxidation to retinal and then to retinoic acid, the active forms of vitamin A, to support the vitamin's important biological functions.

PHARMACOLOGICAL PROPERTIES

Physiological/Therapeutic properties

Vitamin A is involved in immune function, vision, reproduction, and cellular communication. Vitamin A is critical for vision as an essential component of rhodopsin, a protein that absorbs light in the retinal receptors, and because it supports the normal differentiation and functioning of the conjunctival membranes and cornea. Vitamin A also supports cell growth and differentiation, playing a critical role in the normal formation and maintenance of the heart, lungs, kidneys, and other organs.

Mechanism of Action

Varies depending upon the physiological system in which Viatmin A plays its role such as visual system, immune system etc.

Pharmacokinetics

Absorption

Vitamin A compounds are solubilized into micelles in the intestinal lumen and absorbed by duodenal mucosal cells. Plasma concentrations reach a peak level within 3 to 5 hours

Distribution, Metabolism & Excretion

Vitamin A compounds are predominantly stored in the liver in the form of retinyl esters (e.g., retinyl palmitate). When appropriate, retinyl esters are hydrolyzed to generate all-*trans*-retinol, which binds to retinol binding protein (RBP) before being released in the bloodstream. The all-*trans*-retinol/RBP complex circulates bound to the protein, transthyretin, which delivers all-*trans*-retinol to peripheral tissues.

Metabolism of retinol is primarily hepatic. Retinol is conjugated with glucuronic acid; the B-glucuronide undergoes enterohepatic circulation and oxidation to retinol and retinoic acid. Retinoic acid undergoes decarboxylation and conjugation with glucuronic acid and excreted in urine and feces.

SUGGESTED USES

Prevention of Vitamin A deficiency and Maintenance of healthy vision and immune system in following populations:

- Adolescents, Adults and Elderly patients particularly those with cystic fibrosis, gastrointestinal malabsorption syndromes and liver disease
- Lactating women
- Pregnant women at high risk of Vitamin A deficiency particularly during the 3rd trimester. (Vitamin A supplementation is only recommended for pregnant women in areas where Vitamin A deficiency is a severe public health problem. Pregnant women should first be encouraged to receive adequate nutrition, which is best achieved through consumption of a healthy, balanced diet and should receive supplementation only if maintaining adequate levels with diet alone is not possible.)

Note: Adequate Vitamin A levels in pregnant and lactating women also has positive effects for the newborn such as decreased anemia risk, better infant growth and development and prevention of infant morbidity and mortality due to Vitamin A deficiency.

DOSAGE AND ADMINISTRATION

1 drop daily or as advised by the physician based on Recommended Dietary Allowances set forth below for different populations.

Recommended Dietary Allowance (RDA) of Vitamin-A

Recommended Dietary Allowance (RDA) is the average daily level of intake of the Vitamin sufficient to meet the nutrient requirements of nearly all (97%–98%) healthy individuals and is often used to plan nutritionally adequate diets for individuals.

Below values are suggested by **Office of Dietary Supplements, National Institute of Health, US.**

RDAs for vitamin A are given as mcg of retinol activity equivalents (RAE) to account for the different bioactivities of retinol and other Vitamin A analogues.

Conversion factor between mcg Retinol Activity Equivalent (RAE) and Retinol International Unit (IU) is as follows:

0.3 mcg RAE = 1 IU Retinol
1 mcg RAE = 3.333 IU Retinol

Recommended Dietary Allowances (RDAs) for Vitamin A

Age	Male		Female		Pregnancy	Lactation
0–6 months	400 mcg RAE **Retinol**	**1333 IU**	400 mcg RAE **Retinol**	**1333 IU**		
7–12 months	500 mcg RAE **Retinol**	**1666 IU**	500 mcg RAE **Retinol**	**1666 IU**		
1–3 years	300 mcg RAE **Retinol**	**1000 IU**	300 mcg RAE **Retinol**	**1000 IU**		
4–8 years	400 mcg RAE **Retinol**	**1333 IU**	400 mcg RAE **Retinol**	**1333 IU**		
9–13 years	600 mcg RAE **Retinol**	**2000 IU**	600 mcg RAE **Retinol**	**2000 IU**		
14–18 years	900 mcg RAE **Retinol**	**3000 IU**	700 mcg RAE **Retinol**	**2333 IU**	750 mcg RAE **2500 IU Retinol**	1,200 mcg RAE **4000 IU Retinol**
19–50 years	900 mcg RAE **Retinol**	**3000 IU**	700 mcg RAE **Retinol**	**2333 IU**	770 mcg RAE **2566 IU Retinol**	1,300 mcg RAE **4333 IU Retinol**
51+ years	900 mcg RAE **Retinol**	**3000 IU**	700 mcg RAE **Retinol**	**2333 IU**		

Administration instructions
Bottle should be held vertically. After some time, a calibrated drop would fall each containing 2666 IU of Vitamin A (Retinol).
Dosing considerations in special populations
Renal Impairment
Data is not readily available

Hepatic Impairment
Data is not readily available

CONTRAINDICATIONS
- Hypersensitivity to retinol or any other Vitamin A analogue
- Hypervitaminosis A

WARNINGS AND PRECAUTIONS
Reduced bone mineral density and osteoporosis
Results from some prospective studies have suggested that long-term intakes of retinol in excess of 5,000 IU/day have been associated with reduced bone mineral density (BMD) and increased risk of osteoporotic fracture in older adults. However, causal relationship of such effects was not established in other studies. In a meta-analysis of 4 prospective studies, including nearly 183,000 participants over age 40, found that highest vs. lowest quintiles of retinol intake significantly increased the risk of hip fracture. A pooled analysis of 4 observational studies on the contrary suggested that both elevated and reduced retinol concentrations in the blood were associated with an increased risk of hip fracture.

Limited experimental data has suggested that vitamin A (as all-*trans*-retinoic acid) may affect the development of bone remodeling cells and stimulate bone matrix degradation (resorption). Vitamin A may also interfere with the ability of Vitamin D to maintain calcium balance. In the large Women's Health Initiative (WHI) prospective study, the highest vs. lowest quintile of retinol intake was found to be significantly associated with increased risk of fracture only in women with the lowest vitamin D intakes.

It is advisable for older individuals to consume multivitamin supplements that contain no more retinol than the recommended dietary allowance.

ADVERSE REACTIONS
Vitamin A is well-tolerated in therapeutic doses. Adverse effects have been described with overdosage.

DRUG INTERACTIONS
- Orlistat, a weight-loss medication can decrease the absorption of Vitamin A from supplements
  The use of cholesterol lowering medicines (like cholestyramine and colestipol) which interfere with fat absorption, may affect the absorption of Vitamin A from supplements
- Intake of large doses of vitamin A may decrease the absorption of Vitamin K
- Retinoids or retinoid analogs, including acitretin, isotretinoin etc. should not be used in combination with single-nutrient vitamin A supplements because they may increase the risk of Vitamin A toxicity

USE IN SPECIAL POPULATIONS
Pregnancy
Pregnant women need extra Vitamin A for fetal growth and tissue maintenance and for supporting their own metabolism particularly during the third trimester due to accelerated fetal growth.

Vitamin A supplementation is reasonable in pregnant women at high risk of Vitamin A deficiency during the 3rd trimester particularly in areas where Vitamin A deficiency is a severe public health problem. However, pregnant women should first be encouraged to receive adequate nutrition, which is best achieved through consumption of a healthy, balanced diet and should receive supplementation only if maintaining adequate levels with diet alone is not possible.

Pregnant or potentially pregnant women should be counseled to monitor their intake of Vitamin A from fortified food and food naturally high in Retinol and avoid taking daily multivitamin supplements that contain more than the Recommended Dietary Allowance (RDA) of Vitamin A established for pregnancy i.e. 2500-2566 IU Retinol.

Total intakes of Retinol that exceed the upper limit (9,333-10,000 IU daily) [See OVERDOSAGE] can cause congenital birth defects. These birth defects can include malformations of the eye, skull, lungs, and heart. Therefore, women who might be pregnant should not take high doses of vitamin A supplements. No increase in the risk of vitamin A associated birth defects has been observed at doses of retinol from supplements below 10,000 IU/day. Unlike Retinol, beta-carotene is not known to be teratogenic or lead to reproductive toxicity.

Breastfeeding
Vitamin A and its analogues are distributed into breast milk. The Recommended Dietary Allowance (RDA) for lactating mothers is 4000-4333 IU of Retinol. Adequate Vitamin A levels during breastfeeding has positive effects for the newborn such as decreased anemia risk, better infant growth and development and prevention of infant morbidity and mortality due to Vitamin A deficiency.

Renal Impairment
Data is not readily available

Hepatic Impairment
Data is not readily available

OVERDOSAGE
Because Vitamin A is fat soluble, the body stores excess amounts primarily in the liver and these levels can accumulate. Although hypervitaminosis A can be due to excessive dietary intakes, the condition usually results from consuming too much Vitamin A supplements. After hypervitaminosis A has developed, tissue levels take a long time to fall even after discontinuation of Vitamin A intake and the resulting liver damage is not always reversible.
Excess Retinol can have significant toxicity however; large amounts of beta-carotene are not associated with major adverse effects. Retinol is rapidly absorbed and slowly cleared from the body. Therefore, toxicity from retinol may result acutely from high-dose exposure over a short period of time or chronically from a much lower intake.

Tolerable Upper Intake Level – Upper Limit (UL) of Retinol
Tolerable Upper Intake Level (UL) is the maximum daily intake of Vitamin A (Retinol) unlikely to cause adverse health effects. They apply to both food and supplement intakes and are based on the amount above which increasing the dose is associated with an increased risk of liver abnormalities in men and women, teratogenic effects, and a range of toxic effects in infants and children.

Long-term intakes above the below defined upper limit (ULs) increase the risk of adverse health effects. These values are suggested in the document set forth by the **Office of Dietary Supplements, National Institute of Health, US.**

Tolerable Upper Intake Levels (ULs) for Retinol				
Age	**Male**	**Female**	**Pregnancy**	**Lactation**
0–12 months	600 mcg RAE **(2,000 IU)**	600 mcg RAE **(2,000 IU)**		
1–3 years	600 mcg RAE **(2,000 IU)**	600 mcg RAE **(2,000 IU)**		
4–8 years	900 mcg RAE **(3,000 IU)**	900 mcg RAE **(3,000 IU)**		
9–13 years	1700 mcg RAE **(5,667 IU)**	1700 mcg RAE **(5,667 IU)**		
14–18 years	2800 mcg RAE **(9,333 IU)**	2800 mcg RAE **(9,333 IU)**	2800 mcg RAE **(9,333 IU)**	2800 mcg RAE **(9,333 IU)**
19+ years	3000 mcg RAE **(10,000 IU)**	3000 mcg RAE **(10,000 IU)**	3000 mcg RAE **(10,000 IU)**	3000 mcg RAE **(10,000 IU)**

Symptoms
The manifestations of hypervitaminosis A depend on the dose and rapidity of the excess intake.

Acute vitamin A toxicity is relatively rare. Signs/symptoms include nausea, vomiting, diarrhea, headache, irritability, drowsiness, dizziness, lethargy, fatigue, loss of appetite, dry skin, desquamation, cerebral edema, increased intracranial pressure, bulging of fontanels in infants, diplopia and papilledema. Signs/symptoms may be delayed for 8 to 24 hours. Peeling of skin around mouth may be observed from 1 to several days after ingestion and may spread to the rest of the body. Acute toxicity develops after massive single ingestion of doses as high as 25000 IU retinol per kg body weight or more.

Chronic intakes of excess Vitamin A can lead to dizziness, nausea, headaches, dry itchy skin, cracked lips, brittle nails, hair loss, bone and joint pain, bone demineralization, desquamation, anorexia, weight loss, weakness, enlarged liver, enlarged spleen, anemia, optic neuropathy, blindness cerebral edema, increased intracranial pressure (pseudotumor cerebri), coma, and even death. Symptoms of chronic vitamin A toxicity in infants also include bulging fontanels.

Severe cases of hypervitaminosis A may result in liver damage, hemorrhage, coma or even death.

Treatment of overdose
For an acute overdose, empty stomach and follow with activated charcoal and a purgative. Treat symptomatically.
Intracranial pressure may be reduced with intravenous dexamethasone or mannitol. In untreated patients, increased intracranial pressure may persist for 4 weeks after discontinuation of vitamin A.
For chronic ingestions, discontinue Vitamin A. Toxicity is slowly reversible but may persist for several weeks. Monitor blood pressure, fluids, electrolytes, CNS status, complete blood count and hepatic function.

INSTRUCTIONS
Shelf Life
Observe expiry date on the outer pack

Special Precautions for storage
Do not store above 30˚C.
Keep out of the reach of children.
Protect from sunlight and moisture.

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۳۰ ڈگری سینٹی گریڈ سے زیادہ درجہ حرارت پر نہ رکھیں۔
بچوں کی پہنچ سے دور رکھیں۔ دھوپ اور نمی سے بچائیں۔

PRESENTATION
Nature and contents of container/packaging
Torga (Vitamin A) 2,666 IU drops are available in a pack of 10 mL.

MANUFACTURED FOR:
ASPIN
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