

Gadot Biochemical Industries



Marketing Information

Tri Calcium Citrate for Mineral Supplements (Tablets)

The Importance of Calcium

Calcium is the most abundant mineral in our body. It makes up about 2% of the body-weight and about 39% of the total body minerals.

Plays an essential role in

- Building bone mass and preventing osteoporosis
- Critical in the homeostatic maintenance of nerve, muscle and other tissue activity.
- Proper kidney function
- Regulation of blood pressure and blood cholesterol levels
- Essential for a wide range of fundamental cellular reactions.
- Known to activate more than 300 enzymes.

Optimal Calcium intake

Optimal calcium intake refers to the levels of consumption that are necessary for an individual to:-

- Maximize peak adult bone mass,
- Maintain adult bone mass,
- Minimize bone loss in the later years.

Calcium intake of up to 2000 mg/day appears to be safe for most individuals. Below is a list of the National Institute of Health recommended requirements for calcium (**Optimal Calcium Intake**) in comparison to U.S. **Recommended Dietary Allowances**

Age	RDA mg/day	OCI mg/day
Less than 6 months		400
6-12 months		600
1-5 years		800
6-10 years	800	800 – 1200
11-24		1200 - 1500
Men 25-65 years	800	1000
Men over 65 years		1500
Women 25 – 50		1000
Women Pregnancy or breast feeding	1200	1200 – 1500
Women over 50 on estrogen		1000
Women over 50 Not on estrogen		1500
Women over 65		1500

The Calcium Sources

There are different sources of calcium in various forms so how to choose the proper one?

Properties to be considered:

- Bioavailability
- Calcium content
- Solubility
- Organoleptical characteristics
- Effect on the stomach
- Effect on kidney stones formation.
- Interaction with other ingredients

Commonly used Calcium sources:

Organic Calcium	Inorganic Calcium
Calcium Citrate	Calcium Carbonate
Calcium Lactate	
Calcium Gluconate	

So, which is preferable? Organic calcium or inorganic calcium?

Calcium Bioavailability

It is generally agreed that the bioavailability of Organic Calcium is be much higher than Inorganic Calcium. From the literature it appears that the bioavailability of Organic Calcium is **2 to 5 times** higher that of Calcium Carbonate.

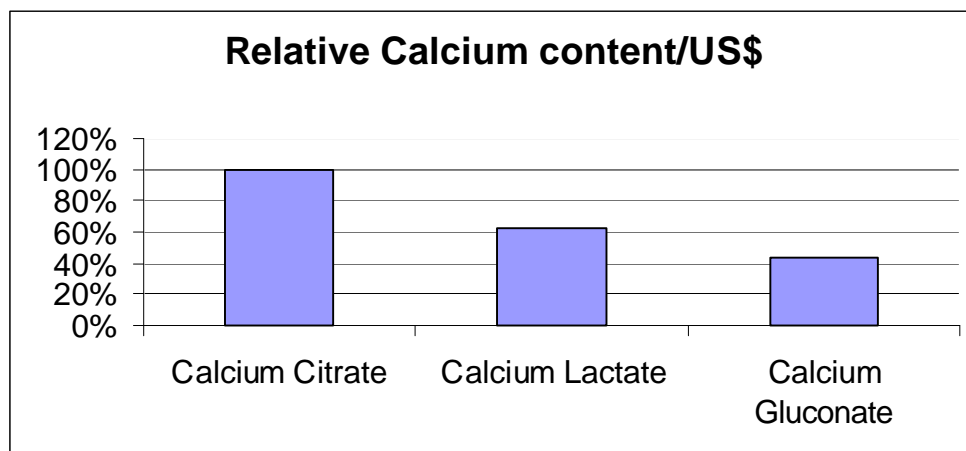
On the other hand, the various organic calcium shows more or less the same bioavailability with slight advantage to Calcium Citrate.

Conclusion: Organic calcium sources have a better bioavailability, solubility and organoleptical characteristics.

Costs

For the same amount of money one will get 100% amount of Calcium as Citrate or 62% of that amount of Calcium as Lactate or only 43% of that amount Calcium as Gluconate.

Calcium Citrate is by far a more cost effective source than any other Organic Calcium source.



Conclusion: Tri calcium Citrate will be the most suitable and most cost effective among organic calcium sources.

Other Benefits of Calcium Citrate

Calcium Citrate and the stomach

Does not cause stomach upset

Calcium absorption is independent of gastric acid secretion so calcium Citrate can be taken on an empty stomach or given during meals.

Calcium Citrate and kidney stones

There are contradictory reports on calcium and kidney stones. Some studies indicate that increasing the intake of calcium may worsen the problem of men with a history of kidney stones. In other studies, men suffered fewer kidney stones when they consumed more calcium.

More studies on the calcium-kidney stone is therefore needed.

However, Calcium Citrate has been shown to reduce the risk of stone formation by enhancing renal excretion of citrate, which is an inhibitor of the crystallization process.

Calcium Citrate and Iron uptake

Iron absorption can be decreased by as much as 50% by many forms of calcium supplements or milk ingestion, but not by forms that contains citrate and ascorbic acid, which enhance iron absorption.

Calcium Citrate and Other Nutrients

Calcium Citrate can be used in combination with other nutrients.

It was found (in practice) that Calcium Citrate has good compatibility with:

Natural fibers

Vitamin A

Vitamin D

Vitamin C

Magnesium

Zinc

Iron

TCC-TG or TCC HD for Mineral supplements

TCC TG or TCC HD was found to be the most suitable products for mineral supplements (tablets).

The physical characteristics of TCC TG and TCC HD are specifically designed to enable direct compression and create stable tablets.

TCC HD more often used in combination with other minerals while TCC TG is used for tablets contain solely Tri Calcium Citrate.

Both grade are used for this application and a customer may pick the one which is most suitable to its tableting process.

Using TCC TG or TCC HD for mineral supplement has the following advantages:

- *High bioavailability.*
- *Relatively high calcium content: Cost effective calcium source.*
- *Neutral taste.*
- *Calcium absorption is independent of gastric acid secretion. It does not cause stomach upset and can be taken on an empty stomach or with a meal.*
- *Low risk of renal stone formation.*
- *Does not block iron absorption.*
- *Low interference with other minerals.*
- *Good compatibility with other nutrients and minerals.*
- *Can offer a **premium product** and expand product line*

TCC HD is Currently available, packed in 25 kg, 50 lb or 25 lb paper bags.

TCC TG is Currently available, packed in 25 kg carton Boxes.