



Calcium Propionate - Health Food?

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Calcium propionate has been used as a mold inhibitor in bakery products for over 50 years. I have a bread bag from the mid 60's that makes the audacious claim "Now with Calcium Propionate for Added Freshness". How the world has changed! Today, calcium propionate is viewed by many consumers and activists as a potentially harmful chemical preservative that should be removed from bakery products. There is evidence that calcium propionate is different from other ingredients used as preservatives and deserves to be treated separately. Let's examine the facts.

What is calcium propionate?

Calcium propionate is the calcium salt of propionic acid, produced by neutralizing propionic acid with calcium. Propionic acid is a fatty acid. Fatty acids are the components from which triglyceride fats and oils are made. There are dozens of fatty acids in nature. Propionic acid is the second simplest, being composed of only 3 carbon atoms, 6 hydrogen atoms and 2 oxygen atoms. Only acetic acid (vinegar) is simpler. Propionic acid can be produced synthetically from propane, or it can be produced via fermentation. Many bacteria produce propionic acid. Most notably are the bacteria that produces Swiss Cheese, *Propionibacterium shermanii*. In Swiss Cheese, propionic acid is produced by the fermentation of lactose in the milk and neutralized to calcium propionate by the calcium in the milk. The characteristic flavor of Swiss Cheese comes from the calcium propionate and other fatty acids produced by the natural fermentation and the breakdown of the fats in the milk. There is about 1% naturally occurring calcium propionate in Swiss Cheese, which is over four times the level used in breads as a preservative.

What role does propionic acid play in human health?

Propionic acid is one of a group of fatty acids called the short chain fatty acids, including also acetic acid and butyric acid. These

short chain fatty acids are very small and simple molecules that can pass directly through the intestinal wall and into the blood stream. In the blood stream, the short chain fatty acids are powerful solvents, acting on higher melting point fats, saturated fats and cholesterol. There is evidence that they prevent plaque buildup in arteries and the resulting heart disease.

Other sources of propionic acid

Eating Swiss Cheese would be a great way to get calcium propionate and thereby propionic acid into our diets. Bread containing calcium propionate is another good source. There is another reason why bread and grain products are good sources of propionic acid.

Bread contains non-digestible, insoluble dietary fiber, which passes intact through our stomach and into our small intestines. There, beneficial bacteria are able to ferment the dietary fiber to extract glucose, on which they survive and thrive. We have all heard about the microbiome by now and how the presence of dietary fiber in our food provides nourishment for the good bacteria that comprise our microbiome. Feeding the good bacteria is good, but why? One reason is that the bacteria produce short chain fatty acids as a natural by-product. Fiber goes in and short chain fatty acids come out.

One of the main benefits of having insoluble fiber in the diet is due to the production of short chain fatty acids in the small intestine. The fiber feeds the good bacteria in the small intestine, which produce short chain fatty acids, which are absorbed into the blood stream, where they act as solvents to keep the 'bad' fats moving and protect against heart disease caused by fatty plaque buildup. Short chain fatty acids are very good for us.

Conclusion

Calcium propionate contains a beneficial short chain fatty acid. We should not be afraid of calcium propionate as a potentially harmful chemical preservative with unknown negative side effects. Rather, it's time we considered the facts and identified calcium propionate as what it is - a source of beneficial, short chain fatty acids. A health food!

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