

PA Milk Marketing Board  
Carol A. Hardbarger

### *Why Vitamin D is Added to Milk*

Imagine it is the early 1900s. Just recently it was determined that nearly 80 percent of the children in Boston had rickets, a condition that leads to the softening and weakening of bones. We know now that it is directly related to a deficiency of vitamin D or calcium and generally affects children.

Vitamin D helps with absorption of calcium and phosphorus from food; consequently, a lack of vitamin D makes it difficult to maintain adequate levels of those elements in the bones, leading to rickets.

Rickets became widespread with growth of the Industrial Revolution and childhood labor. Children did not have much exposure to sunlight as they were kept indoors working in factories, and factory pollution blocked much of the sunlight if they were outdoors.

Vitamin D is unique in that it can be synthesized in the skin with exposure to sunlight. It does not occur naturally in many foods beyond fatty fish (tuna, swordfish, and salmon to name a few) and even eating recommended amounts of those would not provide enough of the vitamin in a week to help with the problem (National Institutes of Health). As noted above, many children in early industrialized America did not see much sunlight!

In addition to weakening and softening of bones, symptoms of rickets include delayed growth, delayed motor skills, pain, muscle weakness and skeletal deformities.

As early as 1919, scientists began to study the cause of rickets, experimenting with different diets fed to puppies. The puppies were fed only bread and low-fat milk, inducing rickets, and then were treated with two specific diets. One consisted of yeast (for vitamin B) and orange juice (for vitamin C) and one using cod liver oil and butterfat. The diet with added vitamins B and C did not reduce the rickets symptoms, but the diet containing what was later named vitamin D did.

Voluntary addition of vitamin D to milk by processing plants began in the 1930s and is a practice continued today; however, there was some carelessness among some processors during World War II which led to an outbreak of vitamin D overdoses in infants and young children. For a while, many European countries banned the addition of vitamin D to milk. Once the problem was recognized, it was quickly corrected. The number of rickets cases in Boston decreased to nearly zero once milk fortification began.

Vitamin D was originally added to milk by irradiation or feeding cows irradiated yeast. A simpler and more effective method—adding vitamin D concentrate to milk—was developed and put into use in the 1940; this is the method that is in practice today. (USDA, 1993)

In the US, unfortified milk can be sold, but it must be labeled as such.

If you are “anti-dairy,” you might want to argue that vitamin D might be supplemented in other ways that do not include drinking milk. You could be right on that, but milk is something available, relatively inexpensive, and wholesome in many other ways for children. The greatest value of milk fortification with vitamin D lies in its ability to increase the absorption of calcium, which occurs naturally in milk, through the small intestine.

Calcium is required by the body not only for the mineralization of bones, but for neuromuscular function as well.

So, as one Washington Post journalist has said, “Humans are kinda capable of photosynthesis.” And they use the sun to produce what scientists have long believed to be the oldest hormone on earth, or vitamin D. (Cowart, L., May 12, 2016)

Okay, okay, it isn’t actually photosynthesis in the ways plants do it to produce food, but it has the same basic outcome—using sunlight to synthesize a chemical.

We can ensure that our children and we, as adults, have sufficient vitamin D by drinking wholesome, fortified milk, plenty of which is available all over the commonwealth!

PMMB is always available to respond to question and concerns. I can be reached at 717-210-8244 or by email at [chardbarge@pa.gov](mailto:chardbarge@pa.gov).