

April 2008

The Experts' FORUM



Feature Article:
Rapid Analysis
of Vitamin A & D
in Milk

Rapid Analysis of Vitamin A and D in Milk

Contributed by: Robert Sikora, SciMed Technologies Inc.
EDMONTON, ALBERTA

Researchers and Scientists have been continuously praising the importance of Vitamin A and D in our diet. Studies have shown that low amounts of Vitamin A can be harmful to a growing child, one result being childhood blindness. 50% of children under the age of 5 have been found to have inadequate amounts of Vitamin A in their diets. Vitamin D has become more popular in the news these days with numerous studies stating that Vitamin D can help in the prevention of cancer, and that not enough Vitamin D can increase one's chances of heart attack, heart failure or stroke. Research studies have shown that Vitamin D is important to maintain a healthy immune system and regulating cell growth. As much as 40% of older adults bone fractures and hip injuries are due to inadequate amounts of Vitamin D in their diet.



Aside from receiving Vitamin D from the sun, we can find it, along with Vitamin A, in fortified foods such as milk. North Americans tend to receive less Vitamin D from the sun since being further away from the equator and working indoors. Those living in northern climates with long winters simply do not get enough Vitamin D during the summer months alone. In this regard people must receive Vitamin D from other sources, milk being a main source.

Too much of something can also be harmful for you. Vitamin A and D are no different, where they can be toxic to one's health. So how do we know that we are getting the correct amount of Vitamin A or D as stated on the milk label? We don't. Traditional methods of testing for the concentration of Vitamin A and D by HPLC take weeks before the results of the test reach the processor (analysis are conducted externally). By this time the milk is already on the shelf or being consumed. This means from the time in which the vitamins have been added to the milk and tested, to the time that the processors receive the results, it is too late to make adjustments.

With SciMed Technologies recently developed ELISA test kits, the risk of over-fortified or under-fortified milk will no longer be a concern for dairy processors looking for ways to improve on product analysis. SciMed has taken the testing time down from 5 days to 2-3 hours, while using less solvents and laboratory equipment. (...)

SciMed's ELISA (Enzyme-Linked Immunosorbent Assay Technology) kits can be used to test up to 41 samples at one time by one technician.

SciMed Technologies has developed VitaKit A™ and VitaKit D™ for the analysis of Vitamins A and D in fluid milk. The ELISA kits are based on proprietary

monoclonal antibodies against vitamins A & D, which bind to the Vitamin A or D analytes extracted from the milk. The Vitakits consist of a two step process, the first being the extraction of the analytes from the milk (slight variation between Vitamin A and D extractions) and the second step the ELISA assay (test.) SciMed's rapid extraction (saponification) is the addition of KOH to the milk which releases the vitamins due to their fat solubility. With the addition of KOH and other chemicals an exothermic reaction causes vitamin solubility change. Vitakit A is a Direct-sandwich ELISA and the Vitakit D is a Direct-competitive ELISA.

With error rates being as low as 4%, SciMed Technologies Inc. ELISA vitakits have been widely accepted within the scientific community as quick, reliable, simple and accurate for determining specific quantities of vitamins A and D. The Vitakits A and D are based on monoclonal antibodies developed by SciMed for this purpose.



FOR MORE INFORMATION CONTACT: Robert Sikora, B.Sc.
SciMed Technologies Inc.
Edmonton, AB

www.scimedtechnologies.com
robert.sikora@scimedtechnologies.com

The Canadian Dairy Commission supports

information interaction innovation

VISIT: MILKingredients.ca