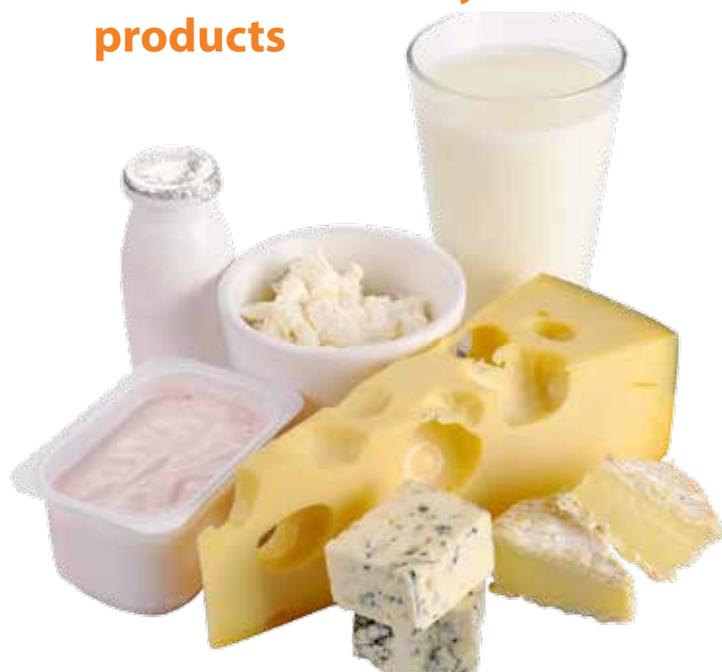


Dairy Products



Eurofins Vitamin Competence Centre

The world of dairy products



The responsibility for quality assurance of dairy products is shared by public health officials, the dairy industry and consumers, but it begins with the farmers. Farmers are dedicated to provide us with safe, high quality milk. Their commitment to quality also means caring for their animals and the land.

Milk and dairy products undergo a number of safety, quality and sanitation procedures such as pasteurization, making them among the most highly regulated and safest foods available. It is within the safety and quality part that we can assist you. Eurofins Vitamin Competence Centre is able to help you with knowledge and quality assurance when it comes to vitamins and amino acids.

Milk and dairy products are full of nutrients to help your body. Some of the vitamins you will find as natural components in milk is vitamin A, vitamin D, vitamin B12 and riboflavin as well as other B-vitamins. It is also allowed to fortify dairy products with vitamins, so therefore we always recommend controlling the fortification and checking the quality of the fortified dairy products, so no issues will occur. It is a question about food safety.

General information for dairy products

According to EF 1925/2006 it is a criteria that the added vitamins have a certain purity. Therefore, we recommend that you analyse the raw material once in a while, just to make sure that the raw material is still up to date and within the declaration given by the provider.

In the EF 1925/2006 it is also mentioned that it is mandatory to have a nutrition labeling on the

product. For safety and security for you as well as the consumer we can help you check the nutrition labeling.

According to EF 1925/2006 it is allowed to add the following vitamins to food in general. In the table below the different forms of the vitamins that are allowed to add are mentioned:

Vitamin A	Retinol Retinol acetate Retinol palmitate Beta-carotene
Vitamin D	Cholecalciferol Ergocalciferol
Vitamin E	D-alpha-tocopherol DL-alpha-tocopherol D-alpha-tocopherol acetate DL-alpha-tocopherol acetate D-alpha-tocopherol succinate
Vitamin K	Phylloquinon
Vitamin B1	Thiamine hydrochloride Thiamine mononitrate
Vitamin B2	Riboflavin Riboflavin-5'-phosphate, natrium
Niacin	Nicotinic acid Niacinamide
Pantothenic acid	Calcium-D-pantothenate Natrium-D-pantothenate Dexpantothenol
Vitamin B6	Pyridoxinhydrochloride Pyridoxine-5'-phosphate Pyridoxindipalmitate
Folic acid	Pteroylmonoglutamic acid
Vitamin B12	Cyanocobalamin Hydroxycobalamin
Biotin	D-biotin
Vitamin C	L-ascorbic acid Natrium-L-ascorbat Calcium-L-ascorbat Potasium-L-ascorbat L-ascobyl-6-palmitate

The Vitamin Competence Centre is able to help determining the content of the mentioned forms of vitamins. For specific offers we recommend you to contact your local Eurofins laboratory.

What is also important

When it concerns labelling it is important to know what is mentioned on the labelling and how it is mentioned. When comparing analytical results with the declared amounts on the declaration it is significant to remember in which form each nutrient is declared and in which form the analytical results are reported. An example for this could be

for vitamin B1, which could be as thiamin, thiamin hydrochloride or thiamin mononitrate.

Another factor that is important when comparing analytical results with the declaration is that declarations are often based only on added amount, while the analytical result is the total amount of vitamin. Therefore the analytical result will often be higher than the declaration.

As you see, it is very important to be aware of these things when looking at the declaration and analytical values. Below is mentioned two other issues which need special attention.

Vitamin A - Retinol and Beta-Carotene

The two main components of vitamin A is retinol (or preformed vitamin A) and beta-carotene (which can be biosynthesized in the body to give retinol). To give a value for total vitamin A the values for retinol and beta-carotene should be added together. The total vitamin A is sometimes given on the declaration and therefore you need to order both analysis of retinol and beta-carotene.

Niacin and Tryptophan

Niacin is collectively known as the sum of nicotinic acid and nicotinamide. Tryptophan can be converted in the body to nicotinic acid. On average, 60 mg tryptophan is equivalent to 1 mg niacin. In order to estimate the niacin equivalent for the food it is necessary to add together the figures given for 'niacin' and 'niacin from tryptophan'. If it is niacin equivalents that are mentioned on the declaration you need to order both the analysis of niacin and tryptophan. The Vitamin Competence Centre can assist you with this.

Milk and cream

There are many different varieties of milk available for consumption, being skimmed milk, whole milk etc. The natural content of vitamins will vary from milk to milk. Especially the natural content of the fat-soluble vitamins will vary, because they are dissolved in the fat fraction in the milk as well as in the cream. That means that the natural content of fat-soluble vitamins in the whole milk will be higher than in the skimmed milk, because the fat fraction is removed to varying levels. The content of natural found vitamins will be highest for the cream since no fat fraction are removed.

If there should be any interest of knowing the natural content of e.g. vitamin A and vitamin D3 in the milk, we have developed methods especially accredited for milk-samples. These methods have a lower limit of quantification (LOQ) and we are able to determine a level down to 10 µg/100g (vitamin A) and 0,25 µg/100g (vitamin D3).



Cheese

Like milk there are many different varieties of cheese available for consumption e.g. hard cheese or soft/fresh cheese. In very fresh cheese there can be sufficient amounts of free whey, which may increase the uncertainty of sampling and analysis significantly. In such cases it is important to be aware that grinding and mixing of cheese samples are done carefully and without loss of water. The Vitamin Competence Centre therefore uses specific guidelines to get a representative sub-sample. We follow the guidelines in dairy chemical analysis methods from the Danish Authorities.

FACTS

Milk and dairy products undergo a number of safety, quality and sanitation procedures such as pasteurization, making them among the most highly regulated and safest foods available. It is within the safety and quality part that we can assist you.

Eurofins Vitamin Competence Centre is able to help you with knowledge and quality assurance when it comes to vitamins and amino acids.

Dairy desserts

As mentioned earlier you have to be aware of natural content of vitamins, especially when it concerns dairy desserts because many of the additional flavors and accessories added to these products can contain a lot of natural vitamins. As an example chocolate/cocoa is mentioned. Below you will find some nutrition data for dark chocolate with 70 to 85% solid cocoa:

Nutrient	Nutrition data
Vitamin K1	7,3 µg/100g
Vitamin B2	0,1 mg/100g
Niacin	1,1 mg/100g
Vitamin B12	0,3 µg/100g
Pantothenic acid	0,4 mg/100g

*Table text: This is only as a nutrition guideline.
Reference found August 21st 2012: <http://nutritiondata.self.com/facts/sweets/10638/2>*

As you can see these extra flavors can have an effect on the analytical result.

Yogurt and fromage frais

Yogurt and fromage frais can like dairy desserts contain a lot of different additional flavors and accessories. In some yogurts and fromage frais there are added different kinds of cereals. Again you have to be aware of natural content coming from other substances than the yogurt or the fromage frais.

It is also very important for the analytical analysis that these samples are being homogenized, so that analyses are done on a representative sample. Therefore we have highly skilled laboratory technicians educated in making a homogeneous sample.

What we can offer you

The Eurofins Vitamin Competence Centre is dedicated to analyse vitamins and amino acids. This narrow and highly specialized focus enables us to provide a "State of the art" service for our customers helping them to:

- Ensure a safe product
- Improve quality
- Reduce costs
- Enhance branding

We are able to provide high quality and supreme service to you. Our quality system is based on DS EN ISO IEC 17025. We use daily control including use of reference materials. We participate in proficiency tests being FAPAS, BIPEA, NIST, company specific trials etc. We are always open to customer visits and audits. We have up-to-date equipment and very good facilities and we use semi-automatic and separate production lines.

Our Business Manager and Quality Manager are highly experienced and we have five experienced chemists designated to ensure that the highest quality standards are being met. We have five persons in customer support to take care of customer contact and approximately 35 highly skilled laboratory technicians.

We are always willing to make customer specific packages to be able to provide you with the things you need for analysing. For any queries or questions please contact our customer centre at

vitamins@eurofins.dk

