Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 19, Issue 1, 2019
PRINT ISSN 2284-7995, E-ISSN 2285-3952

QUALITY EVALUATION OF ORGANIC DAIRY PRODUCTS IN RELATION TO THE CONVENTIONAL

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Abstract

In this paper proposes assessment of the quality of milk products from two perspectives, conventional and organic products. In the first part of the paper, by studying literature, will bring attention to their views about the relationship between prejudice and conventional and organic products in terms of quality and price. The main research methods used throughout the paper method will be: SAIN-LIM, with which it will be able to appreciate the level of quality of such products and the method of comparative analysis of the results obtained after calculating the two indicators. In the second part will choose a product ecological and conventional for several categories of dairy products to determine the value of the indicators described above. Thus, with the help of these results can appreciate differences in terms of the quality of certain conventional and ecological products and their impact on population health.

Key words**:** *quality, dairy products, conventional, organic*

INTRODUCTION

The concept of quality is a term that is used in all fields with different meanings, corresponding to each of them; the meanings of this concept are philosophical in nature, economic, technical, social, and last but not least the nature of logic [9]. So we can say that between the quality and the consumer are relationships of interdependence which is why the quality of a product is determined by the characteristics that it possesses [4].

Consumer demands determines the evolution of quality and for this reason these demands must be fulfilled in order to permanently achieve products offering the final consumer satisfaction and generate profit in time [7].

The food industry must maintain high-quality standards and to ensure the safety of agri-food products to meet consumer needs, regarding purchase decisions and to identify their preferences for food high quality and affordable price [1].

Organic agriculture is based on a principle well founded in that health is placed above all the health of soil, plant, animal, and the inhabitants of the planet, and its conventional farming relies on a major objective, which is to maximize productivity and hence profitability [10]. Increasing agricultural productivity to feed the growing population without soil deterioration, water quality and the environment is a critical necessity that people face on a daily basis [6].

Organic foods are products of animal or plant origin, which have been produced without the use of chemicals such as pesticides or herbicides, without synthetic additives substances from their processing, non-genetically modified and which have not been exposed radiation, and their benefits are equal for the health of the consumer, but also for the environment, which does not suffer as a result of technological processes [2].

One of the differences between organic and conventional food may be how they are grown, produced and processed, and with regard to specific rules regarding what is considered environmentally friendly product or conventional may vary depending on the region [8].

The dairy industry has two main production areas: the first production area is the primary production of dairy farms, the keeping of

cows, goats for the production of milk for human consumption, and the second area of production is the processing of milk, ranging from processing to sellable life [5].

The food supply chain quality issue has received considerable attention in recent years in the dairy industry, quality and safety problems occur more frequently in the upstream supply chain, such as milk sources. The quality of dairy products directly affects the health and safety of consumers, the image of the branded product, but also the competitive advantage and sustainable development of the dairy supply chain [3].

MATERIALS AND METHODS

For assessing the quality of organic products and conventional labels have been studied to 12 products. Use of SAIN-LIM can achieve nutritional profile, such as evaluation and quality of organic products and sanogenetic conventional.

According to [11], the calculation of the method SAIN-LIM is:

$$\text{SAIN} = \frac{\sum_{i=1}^{n} ratio_i}{n} * 100$$

$$ratio_i = \left[\frac{nutrient_i}{RV_i}\right] * \frac{100}{E}$$

Acceptability threshold established for the SAIN indicator is over 5 units. The nutrient i is composed of all positive nutrients, RVi represents recommended requirements, n is the number of positive nutrients, and E is the energy value of the product.

$$\text{LIM} = \frac{\sum_{j=1}^{3} ratio_j}{3}$$

$$ratio_j = \left[\frac{nutrient_j}{MRV_j}\right] * 100$$

The threshold of acceptability for this indicator, LIM, is over 7.5 units. The nutrient j is composed of a negative impact all nutrients, and MRVj represents the maximum volume recommended for that nutrient.

By analysing possible situations in which you can wrap foods, depending on the method SAIN-LIM, 4 main categories:

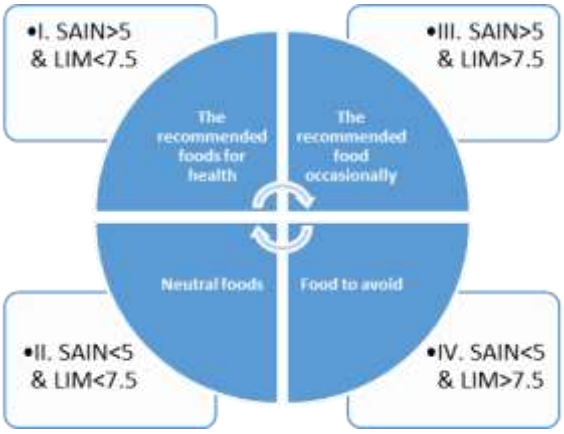

Fig. 1. Classification of products in four categories SAIN-LIM
Source: own processing based on Voinea *et al* (2015).

RESULTS AND DISCUSSIONS

As was noted previously, have been assessed twelve products in the dairy category, divided into conventional products and organic products, 6 for each of the categories, which are: milk, yogurt, kefir, butter, feta cheese, and cow's milk cheese. These products have been chosen because it was easier to find the equivalent of these organic products category. Centralization of data taken from the label the nutritional content, energy value, but also other aspects is contained in table 1.

Table 1. Distribution of respondents by age depending on gender

Existing information on labels	Energy value (kcal)	Protein (g)	Carbohydrates (g)	Fat (g) / saturated	Fiber (g)	Salt(g)	Vitamins/ Minerals
Conventional Products							
Milk	45	3.3	4.5	1.5/0.9	0	0.06	125mg Ca
Yogurt (3.5%)	59	3.2	3.7	3.5/2.1	0	0.06	125mg Ca
Butter	744	0.6	1	82/56.6	0	0.03	
Kefir	57	3.2	3.6	3.3/2	0	0.1	
Feta Cheese	283	16	0.2	24.3/15.5	0	3	
Cow's cheese	261	15	0.7	22/15.4	0	2.2	
Organic Products							
Milk (1.5%)	44	3.2	4.5	1.5/0.9	0	0.06	125mg Ca
Yogurt (3.5%)	61.5	3.3	4.2	3.5/3	0	0.13	125mg Ca
Butter	743	0.7	0.6	82/53.9	0	0.03	
Kefir	57	3.4	4.1	3/2.5	0	0.1	
Feta Cheese	288	17	0.03	24.4/17.7	0	2.8	
Cow's cheese	277	17	0.15	23/15.2	0.8	4	

Source: Own calculation.

For both conventional milk and conventional yogurt and for milk and yoghurt ecological environmentally friendly have been taken into account and the content of vitamins and minerals.

For the determination of indicators of SAIN and LIM were calculated average values of nutrients with positive and negative impact of recommended daily.

As a result of the calculations of the two indicators, for conventional dairy products were obtained the following results shown in Figure 2.

Thus, the SAIN indicator is 15.52% for milk, 11.84% for yogurt, 7.02% for kefir and the LIM indicator is 4.61% for milk, 5.90% for yogurt, 5.85% for kefir, these are recommended for conventional health products, because they both indicators correspond to allowable values.

Because the SAIN indicator is 0.10% and the LIM indicator is 86.55%, butter is a conventional product avoided.

Because the SAIN indicator is 7.07% for feta cheese and 7.18% for cow's milk cheese, and the LIM indicator is 36.12% for feta and 32.97% for cow's cheese, these conventional dairy products are recommended.

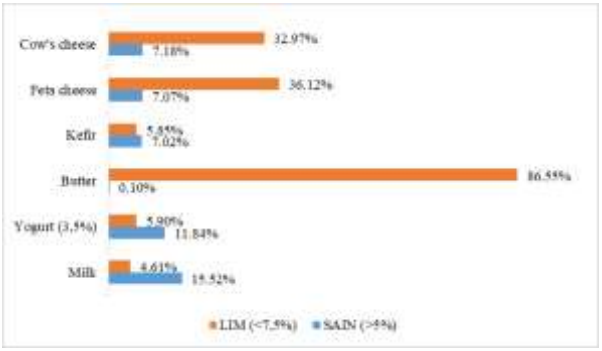

Fig. 2. Conventional dairy products
Source: own processing after calculating indicators SAIN-LIM

As regards the results of the method SAIN-LIM, for organic dairy products were obtained the following results shown in Figure 3.

The SAIN indicator is 15.87% for milk and 7.46% for kefir, and the LIM indicator is 4.61% for milk and 6.94% for kefir, these organic products are recommended for our health, since both indicators have acceptable values.

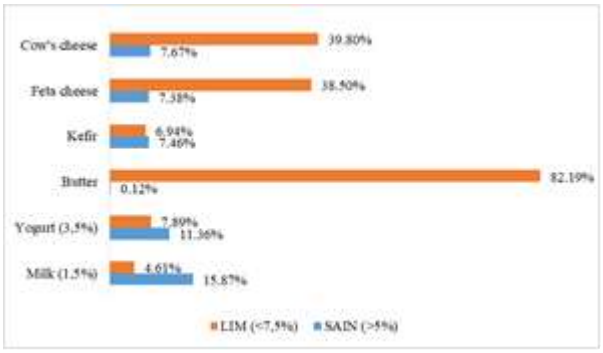

Fig. 3. Organic dairy products
Source: own processing after calculating indicators SAIN-LIM

Because the SAIN indicator, the butter has the value of 0.12% and for LIM indicator, the value is 82.19%, butter is a product of avoided.

Because the SAIN indicator is 11.36% for yogurt, is 7.38% for feta cheese and 7.67 % for cow's cheese and the LIM indicator is 7.89% for yogurt, is 38.50% for feta cheese and 39.80% for cow's cheese, these organic dairy products are featured occasionally.

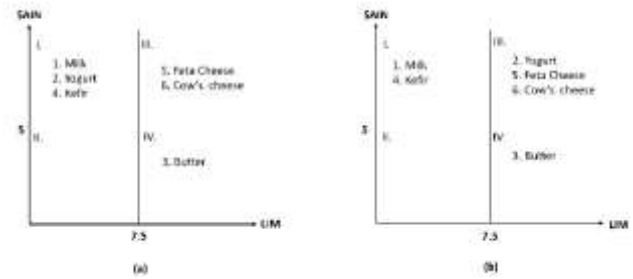

Fig. 4. Classification of dairy products in four categories SAIN-LIM
(a)–Conventional dairy products; (b)-Organic dairy products
Source: own processing after calculating indicators SAIN-LIM

Differences between conventional dairy products and organic dairy products, as regards indicators of SAIN-LIM, are quite different depending on the product. The organic milk has made a favorable difference compared to the conventional, having an increase of 0.35 percentage points for the SAIN indicator and the LIM indicator remained at the same value. The conventional yogurt has seen a difference favourable compared with organic yoghurt, with higher value of the SAIN indicator of 0.48 percentage points, while the LIM indicator is

below the recommended limited in relation to the yogurt. The organic butter recorded a favourable difference of 0.2 percentage points for SAIN indicator and the LIM indicator was reduced by 4.36 percentage points. The other three products, the kefir, the fete cheese and cow's cheese have recorded similar differences between conventional and organic products, for the SAIN indicator these differences are favourable (increase) and for the LIM indicator are unfavourable differences (increase).

CONCLUSIONS

The study wanted to examine differences in nutritional point of view, for two sets of dairy products, one conventional and one ecological. Thus centralizing data on tags nutritional products concerned and analysing them through method SAIN-LIM were recorded relative nutritional differences.

Ranking the products analysed in the four possible categories, you can observe the differences between the two systems, from the very beginning. For conventional products: in the first category (healthy) were ranked the milk, yogurt and kefir; in the third class (featured products occasionally) were registered feta cheese and cow's cheese; butter being the only food "to be avoided". For organic products, the situation is about the same, just that yogurt has gone from "healthy products" to the class "featured products" on an occasional basis.

Contrary to expectations, not all organic products have registered positive values of the two indicators in relation to conventional products, namely, only milk and butter have registered favourable values compared to conventional ones. The organic yogurt has recorded a negative difference in comparison with conventional; and other products, the kefir, the feta cheese and the cow's cheese recorded the favourable differences only for SAIN indicator, not for the LIM indicator.

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