

# Natural Concepts for a Sustainable Nutrition: Kollath<sup>1</sup>

## Overview

In Europe, especially in Germany, Switzerland, Austria, Italy and Great Britain, the idea of integrity and authenticity of food developed in the middle of the 19th century. In those days nutrition was part of a new concept which focused on a natural lifestyle (“back to nature”). This movement was born because of the rapidly increasing industrial development in Europe and a separation between working place and home in industrial cities. Even in agriculture, as a result of the scientific work of Justus von Liebig (1803 - 1873) intensification (mineral fertilizer) and industrialization (meat production) took place (Rothschuh, 1983). The food industry was developed (1850) thanks to new processing techniques such as cooling systems, conservation by sterilization. The first convenience products were put on the market (soups, artificial butter, coffee replacement; Spiekermann 1995, Spiekermann, 1999).

As a response to this development, groups were founded in different parts of Europe to establish alternatives in all life areas. Concepts were created for a natural agriculture which tried to work within a closed cycle (animal - manure- compost) using different techniques and crop-systems (plant protection through e.g. intercropping). In addition, new ideas regarding economy and trade were developed (reform of the property laws, co-operatives for trade, land-settlement societies e.g. Eden and Monte Veritas; Spiekermann, Schönberger, 2001).

People sharing this lifestyle were aware of nature protection and animal husbandry issues, which even led for some to the establishment of principles for a vegetarian life (foundation of the Vegetarian Society in England). A healthy life is supported by guidelines for medical treatment (e.g. Hydrotherapy; Sebastian Kneipp), combined with guidelines for nutrition (e.g. Schroth, Rikli, Kollath).

At the same time the role of food to support health in the human metabolic system was addressed (Lavoisier 1743 - 1794); nutrients and vitamins in foods were discovered and analyzed (Prout 1785 - 1850). Some names have to be addressed here, such as Eijkman, (1896) who detected that the deficiency of “Thiamin” causes Beriberi, or E. Fischer (1902), who described the protein and amino acids requirements for human beings, and Burr & Burr (1929) who described the importance of essential fatty acids.

## The concept of a natural and sustainable nutrition

Basically we can differentiate between two movements in nutrition from which two different nutrition guidelines emerged: “back to nature” versus “analyses of nutrients in food”. While the analytical view led to the “tables of the composition of foods” (Paul, Southgate 1978) and to guidelines focusing on nutrient requirements, the “back to nature” movement stressed the importance of integrity and authenticity of foods, derived from natural agriculture systems. Thus these guidelines addressed “food classes” such as fruits, vegetables, meat etc.; they took into account the processing intensity of those foods and ranked them according to the processing steps (e.g. raw milk, pasteurized milk, sterilized milk, milk powder; Kollath 1988 a, b ; Kollath 1987). The different “food quality categories” which are based on the intensity of the processing are the basics of a whole-food nutrition.

Besides the influence of integrity and authenticity of food on human health, the concept of whole food nutrition tends to take more and more ecological and social/ ethical criteria into account (Koerber, Männle, Leitzmann 2004). Foods should be produced by such agriculture, and processed in such a way, that they support human life, create a regional food culture and sustain natural resources

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<sup>1</sup> Meier-Ploeger, A., Roeger, M. (2004): Natural Concepts for a Sustainable Nutrition. Underlying Principles in Organic and "Low-Input Food" Processing - Literature Survey. In: Schmid, O., Beck, A., Kretzschmar, U. (Hg)., Research Institute of Organic Agriculture (FiBL), Frick/ Switzerland, www.fibl.org, S. 23-27

worldwide at the same time. A nutritional behaviour that respects the following guidelines will support the principles of sustainability and those of a natural food concept.

### *1. Consumption of foods of plant origin and reduced consumption of food derived from animals*

The reason for this guideline is the fact that industrialized countries feed their animals with plant produce (e.g. soybean, wheat, corn) which can be eaten by human beings. In doing so they waste energy and increase the world wide food deficiency. Indeed an average of only 10 - 35% of the energetic value of a plant is “stored” in the animal produce (Strahm 1995).

The guideline to reduce intake of foods derived from animals (e.g. meat and meat products twice a week) takes into account that the European population in general is well provided with protein and energy and tends to develop nutrition based illnesses such as obesity, high blood pressure, diabetes and coronary heart diseases (German statistical agency 2003).

By reducing the intake of foods derived from animals, one reduces as well the potential intake of feed additives, such as antibiotics present in the meat, and the accumulation of organochloric substances in human body fat.

### *2. Increase consumption of seasonal and regional foods*

The consumption of seasonal and regional foods raises the awareness of a regional food culture in the different countries of Europe. The Slow food Movement - as a European movement of consumers, processors, caterers and traders - supports this principle, considering it a natural concept for a sustainable nutrition. “Saving by eating” is the motto of the “arch- project”. Typical regional breeds of animals, typical foods of plant origin, as well as recipes to process food on farm and in industries in a region should be encouraged by a consumer supported market (Meier-Ploeger, Klatt, Odia 2003). Globalization in the European food market destroys smaller enterprises and reduces the range of flavours and tastes which are developed in typical foods in regions of Europe and world wide (Murcott 2003).

Regional products can save energy - when distributed in an efficient way - because of a decrease in transportation and partially because of a decrease in the amount of packaging. Regional structures make it in principle possible to harvest fruits and vegetables fresh and ripe. By this, the content of desirable nutrients is increased (e.g. vitamin C); it is especially the case for secondary plant compounds (e.g. phenol substances) which seem to be important for human health (Watzel, Leitzmann 1999). The sensory characteristics of a product harvested when ripe are most often better than those of products ripened at storage (e.g. sweetness of tomatoes, apples). Regional structures make it possible to process meat from animals in a way (warm) that food additives such as phosphates can be left out e.g. for sausages.

Whole food nutrition advises to use as rarely as possible food preparation techniques that are considered to change the nutrient content of food. This underlying principle includes techniques in the industrial processing as well as in food preparation within the household. Its goal is to reduce the intake of carcinogenic substances (e.g. from grilled meat, as well as phosphate and nitrite) and minimize the loss of vitamins, minerals and secondary plant compounds. Through this, the principle might enhance human health by supporting the immune system (Leitzmann et al. 1999).

### *3. Consumption of organic produce*

Koerber et al (2004) recommend within the natural sustainable food concept to consume organic foods. They showed that the intake of pesticide residues in plant products grown organically is negligible and much lower compared to conventional products.

Annex VI of the EEC Regulation 2092/91 states that food additives such as colouring and preservation agents are restricted (positive list; 36 agents versus approx. 350 in conventional foods) which diminishes the potential risks of allergic reactions.

EEC regulation 2092/91 also prohibits GMO contamination of food derived from organic agriculture and in the food processing. Although we do not yet have evidence that GMO contaminated food interacts with human health, people who refuse GMO-technology because of health fear or ethical

reasons can be sure, that organically produced food contains the lowest possible amount, or even when proven, is free, of GMOs.

Besides the relatively egocentric reasons to consume organic products, more altruistic ones are as important within the natural and sustainable food concept: that is to support a sustainable agricultural production taking care of natural resources, such as soil, water, air and biodiversity (Koerber/ Männle/ Leitzmann 2004; Simon 1998). Supporting regional structures for agricultural commodities is an aim for organic agriculture. Agriculture influences nature and creates landscape. Food derived from a region is an expression of the regional culture (preparation and including processing) (Meier-Ploeger 2003)

#### *4. Reduced consumption of highly processed food*

The first reason for this statement is to diminish the intake of food additives which might interfere with human health (Broadhead 2001). Other reasons are to minimize the loss of desirable nutrients (vitamins, minerals, secondary plant compounds), minimize calorie intake derived from the fat and refined sugar used during the processing, as well as to minimize the food risks resulting from the alteration of ingredients during the processing (e.g. fatty acids, amino acids). The most important principle for this is to ensure the “integrity” / “wholesomeness” of a food (Kollath 1988a, b). Minimizing food processing also means minimizing the additional energy used for food processing. Moreover it is meant to support regional structures in agriculture and in the food preparation branch (Woodward, 1999). Finally it allows reducing food packaging.

#### **Conclusions**

The industrialization in Europe in the 19th and 20th century caused a “back to nature movement” as a life-style, which includes agriculture, nutrition and health treatment. This movement was at the source of a natural concept for sustainable living. The natural concept of nutrition today takes into accounts that:

- a) eating and drinking is one of the most intensive interactions of human beings with nature (food means to incorporate nature),
- b) food should support human well-being (physical and psychological as well as social criteria according to WHO's Health definition),
- c) food and beverages should be tasteful and create a regional food culture
- d) food should be diverse in order to support biodiversity of regional resources.