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https://www.gesundheitsindustrie-bw.de/en/article/dossier/bioactive-plant-foods-more-than-just-filling

Bioactive plant foods: more than just filling

The increasing demand for functional foods clearly shows that the role of food is no longer just to meet an essential need. Food that offers additional nutritional benefits is becoming increasingly important, for example food that is able to prevent or treat diseases. This kind of food is therefore interesting for consumers, the food industry and the healthcare sector alike. Products based on plant raw materials are particularly in demand due to the variety of natural health-promoting ingredients. In the spotlight are plants such as quinoa, which are rich in gluten-free protein, magnesium, iron and unsaturated fatty acids.

Bakeries are already selling gluten-free amaranth bread.

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The primary role of food is to meet an essential need; it also needs to taste good. In addition, it must be healthy and even better, improve our health to meet increasing demands from the public, governments, science and the industry. An increasing number of people are suffering from lifestyle diseases associated with bad eating habits, including type 2 diabetes and cardiovascular diseases. Moreover, a growing number of people have food intolerances and allergies, including for example lactose or gluten intolerance. Due to demographic changes, age-based nutrition is playing an increasing role; age-related loss of appetite, a reduced feeling of thirst, difficulties in chewing and swallowing food can also lead to special food requirements. Innovative food and food supplements based on natural plant raw materials stand to play a considerable role in providing elderly people with nutritious food.

Food that promotes digestive health and lowers the cholesterol level – the number of products is growing

On the one hand, functional foods are a promising market of the future; on the other hand, they have the potential to save on healthcare costs. In addition, they give consumers the possibility of a healthier life with minimum fuss, i.e. without needing to change their diet and by providing them with foods that taste just as good as their calorie-rich originals, for example.

More than 1400 functional foods (information provided by the public health authorities in Nuremberg) were on the German market in 2010, and the number has very probably grown since. “Probiotic” yoghurts, which contain natural cultures of bacteria that are also present in the human intestine and are associated with a positive effect on the intestinal flora, and hence digestion, are probably the best-known examples of functional foods with a positive health image. However, increasing numbers of products containing natural plant substances are entering the market; the list of potential health-promoting bioactive ingredients seems to be endless. For example, plant sterols have been shown to lower cholesterol levels, a risk factor in the development of coronary heart disease, and are thus added to margarine. In order to market foods or dietary supplements as “bioactive plant product” or “functional food”, the European Health Claims Directive from 2007 requires producers to provide scientific evidence for the additional health benefits of the ingredients.

From laboratory bench to supermarket shelves

While the food industry is working on new products, scientists are also looking into the opportunities arising from the new foods. Research in the nutritional sciences has increasingly shifted towards pharmaceutical and medical research that brings together doctors, biologists, nutrition scientists, food chemists and food technologists from different disciplines.

The Max Rubner Institute in Karlsruhe, which is the German Federal Research Institute of Nutrition and Food, is investigating the effect and benefit of bioactive foods, amongst other things. Scientists from the Max Rubner Institute are working on consumer health protection in the nutrition sector by focussing on the question as to whether functional foods can fulfil the expectations we have of them. Ongoing projects are investigating how plant foods can affect processes of cancer development, and what types of bioactive ingredients are found in fruit and vegetable products. The results are then incorporated into recommendations for healthy nutrition.

In order to bring together research and industry activities and facilitate cooperation, the "Bioactive Plant Foods" network

coordinated by Steinbeis-Europa-Zentrum was established in Stuttgart in 2010. Partners from industry, research and marketing are working together with the goal to develop, investigate and place on the market new functional foods based on plant raw materials. The consortium is specifically focused on developing functional foods and food supplements using amaranth.

The basis: securing raw materials

Amaranth field in Peru.
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The selection of plants for the production of bioactive plant foods depends on the ingredients of interest. In principle, edible plants from Europe, Asia and South America such as tea plants, fruit, berries, vegetable and grains can be used for this purpose. In order for a plant to be used for the production of foods and food supplements, the cultivation and supply of the raw materials must be guaranteed. Moreover, all plants must comply with the European Food Law stipulations.

Anoxymer GmbH, based in Esslingen close to Stuttgart, is a member of the "Bioactive Plant Foods" network and specialises in the development of a broad range of different plant extracts. In addition to amaranth, the company also uses other pseudograins such as quinoa, lemon verbena, chia seeds and physalis. The plants are mainly grown in South America, because, the German climate does not enable the production of sufficient quantities of high-quality plant material. The cultivation of amaranth has already received organic certification and can be carried out under Fairtrade conditions, supporting local farmers in Peru to produce amaranth with a relatively constant composition, making the plant optimally suited for the production of functional foods.

Nutraceuticals: a new type of food

The food industry is increasingly focusing on foodstuffs which provide health benefits in addition to their basic nutritional value – nutraceuticals. Depending on the jurisdiction, nutraceutical products can be foodstuffs that claim to prevent diseases, but also foodstuffs that claim to be able to treat and alleviate diseases. Several global food companies are increasingly focussing on nutraceuticals: Nutricia, a specialised healthcare division of the food company Danone that is focused on research-based scientifically-proven nutrition, is developing medical enteral nutrition products. Nestlé has just acquired the medical foods company Pamlab to strengthen its foothold in the drug market.

On the other hand, pharmaceutical companies are increasingly penetrating the functional foods market. They have the expertise to solve medical and pharmaceutical questions and also the expertise in conducting clinical trials to validate the health claims of certain functional ingredients. Moreover, the development of nutraceuticals takes considerably less time and costs less than the development of regular pharmaceuticals. All these issues have led to the growing interest of pharma companies in neutraceuticals.

Healthy, but are they also affordable?

The additional research and development expenditures are also reflected in the price of the products, which is often higher than comparable “traditional” products. Due to increased demand, however, the market share of discounters in functional foods has grown significantly, which in turn has reduced product price. Regardless of price, sales figures and the growing market volume of functional foods (according to Euromonitor International, the market for functional food products in Germany generates turnover of around 4.5 billion euros, accounting for sales increases of nearly 30% since 2005) reflects the popularity of functional products among consumers, a finding that is confirmed by a manufacturer survey of the Paul Rubner Institute. Due to high consumer acceptance, functional food manufacturers can continue to sell their products at premium prices.

Publications:

ACHEMA 2012-Trendbericht Lebensmittelbiotechnologie

Berichte der Bundesanstalt für Ernährung, Band 1: Functional Food – Forschung, Entwicklung und Verbraucherakzeptanz

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