

Healthcare industry BW

Price pressure requires new product developments – the "Bioactive Plant Foods" network

The "Bioactive Plant Foods" network, which is coordinated by the Steinbeis-Europa-Zentrum in Stuttgart, is focused on developing innovative products that have a positive effect on human health and placing them on the market. Research revolves around the health-promoting effect of amaranth, a short-lived plant with catkin-like cymes of densely packed red flowers. More than 20 partners from industry, science and marketing have been working together since 2010 to advance the issue of biological activity and health. The coordinator of the network, Hartmut Welck, provides insights into this sector in Baden-Württemberg, the successes that have been achieved by network partners and why the network is particularly focussing on amaranth.

Mr. Welck, what led to the establishment of the "Bioactive Plant Foods" network?

The initiative to found the network came from regional companies. As there was no network in Baden-Württemberg that focused explicitly on food and nutrition, many companies were calling for the establishment of a platform that enabled like-minded organisations in the region to interact with one another. The small- and medium-sized companies (SMEs) were particularly interested in working together with research partners. We have in fact succeeded in bringing on board the universities of Hohenheim and Heidelberg as well as Esslingen University of Applied Sciences. Another goal was to promote the consortium's competences in the field of nutrition research and innovative products.

Why did you choose amaranth as the lead plant?



Hartmut Welck, coordinator of the "Bioactive Plant Foods" network
© SEZ, Photographer: Susanne Baur

Amaranth is a highly interesting research and development object because of the plant's high-quality nutrition profile, its limited allergenic effect and its proven health benefits. At present we are mainly working with amaranth, but are of course open to using all plants that have an added value in terms of nutritional physiology. Gluten-free plants such as quinoa or oat are of special interest to us. Amaranth also contains limited quantities of gluten, which makes it especially suitable for vegans, people suffering from celiac disease, neurodermatitis and allergies. Aztecs, Incas and Maya used amaranth as food and also believed it to have magical medicinal properties, which is why amaranth is also referred to as Inca gold. Colourful stories aside, amaranth also contains valuable ingredients that can be optimally used by the human organism. It therefore comes as no surprise that amaranth was used for many millennia as one of the key staple foods in the countries on the west coast of South America.

What ingredients make the plant so attractive?

Amaranth contains much more protein than other grains; it has on average 26 percent more protein than wheat. It also contains all the essential amino acids; it contains far higher quantities of lysine and arginine than other grains. For example, it contains on average 120 percent more lysine than wheat. It is also rich in unsaturated fatty acids, vitamin E, dietary fibre and minerals such as magnesium, calcium, potassium and iron. These substances target inflammatory processes as well as arteriosclerosis and therefore have a preventive effect on the development of cardiovascular diseases; they can lower the cholesterol level, support the development of muscle, reduce the risk of osteoporosis and much more.

Can you tell us about some of the network's successes and developments?



The network started with 18 partners and now has 24, most of them from Baden-Württemberg, but there are also some from Bavaria and Switzerland. We are also registered in the Baden-Württemberg Cluster Database. We have been granted funding by the Federal Ministry of Economics and Technology under the ZIM programme (ZIM: "Central SME Innovation Programme") for two cooperative projects as well as redeemed two Federal Ministry of Economics and Technology Innovation Vouchers. We have also expanded our international activities and signed cooperation agreements with several clusters and organisations, including the Upper Austrian Food Cluster. Many projects that we have initiated are well underway, and we will establish an independent structure once ZIM funding ends in August 2013.

Can you give me some concrete examples of the research the network is carrying out?

The ZIM-funded research projects deal with the production of amaranth bakery products and dietary food from amaranth. The projects take into account different aspects of the production of amaranth-based foods. We hope to improve the properties of bakery products in terms of nutritional physiology using amaranth, for example by specifically using milling fractions with biofunctional properties. We are also exploring the possibility of increasing the bioactivity and bioavailability of amaranth extracts. Another research projects focuses on how amaranth can influence the methylation pattern of the interleukin-8 gene. The focus here is on whether and how food functions as an epigenetic factor. In order to do this, we treat cell culture systems with amaranth extracts and subsequently examine whether this has led to changes in the cells' physiology, such as changes in the methylation of the interleukin-8 gene, amongst other things. This also provides us with information on the anti-inflammatory effect of amaranth. We have already initiated control studies, but concrete results are not yet available.

How would you rate the market for bioactive plant foods in Germany?

There is no official definition for bioactive plant foods in the EU, neither is there one for functional foods. This makes it difficult to come up with figures that would provide information on the bioactive plant food market in Germany. According to the public health authorities in Nuremberg, around 1400 different functional food products were on the German market in 2010. In this case, functional foods were defined as those foods that had a proven additional positive effect on human health.

What about the food sectors in Baden-Württemberg?

The Baden-Württemberg nutrition sector is characterised by a large number of SMEs. According to official statistics, there were around 2500 food companies with more than 10 employees in 2009. The food sector is under enormous price and innovation pressure, new product developments are a must for those who want to establish themselves successfully on the market. However, small- and medium-sized companies have great difficulties or no resources at all for operating their own research department. So for them it is essential to work with other companies and research institutions. The network is an ideal platform for finding and working with suitable cooperation partners.

Are there any specific trends in the food sector?

Progress in medical research and the insights into an individual's physiology and desire to adopt a healthy diet adapted to individual requirements also have an effect on developments in the bioactive food area. Like in the field of personalised medicine, the trend in the field of function food is moving towards personalised healthy and preventive nutrition. Personalised nutrition is tailored to an individual's genotype and thus optimally adapted to the individual requirements of consumers.

The "Bioactive Plant Foods" network

A total of 24 network partners from industry, research and marketing are currently working together in the network in order to advance the issue of "biological activity and health" in Baden-Württemberg. Network activities are coordinated by the Steinbeis-Europa-Zentrum. The network focuses specifically on the production of bioactive products that have a positive effect on human health, such as bakery products or food supplements based on amaranth ingredients. The network promotes the cooperation between research and industry and supports the companies in the development, sales and commercialising of products. In addition, the network also makes a contribution to increasing bioactivity and bioavailability as well as to research into the biofunctionality of certain ingredients.

Further information:

Steinbeis-Europa-Zentrum

Hartmut Welck

Network Manager

Tel.: +49 (0)711/ 123 4031

E-mail: [welck\(at\)steinbeis-europa.de](mailto:welck@steinbeis-europa.de)

Article

15-Apr-2013

Bettina Baumann

BioLAGO

© BIOPRO Baden-Württemberg GmbH

The article is part of the following dossiers



Bioactive plant foods – more than just filling