

BERRY POWER

TEXT NADINE ALBACH



Hunting and gathering: Bilberries are extremely popular in Scandinavia

As our society ages, the importance of a healthy lifestyle is growing. Nutritional supplements contribute toward mitigating deficiencies in our daily diet. Evonik is also developing new products in this area

Sweden—for Norwegians, their neighbors are arch rivals. Especially when it comes to sports. Nevertheless, Sjur Svaboe has a photo of Swedish cross-country skiers from the 2006 Olympic team hanging on the wall of his office on the edge of Sandnes, a port city in southern Norway.

Nearly 20 years ago, Svaboe worked with the University of Bergen to develop the manufacturing process for MEDOX®. In 2016, Evonik bought the MedPalett company, which makes the nutritional supplement in Sandnes. MEDOX® contains anthocyanins—plant pigments from bilberries and black currants that promote heart health, blood circulation, and physical well-being (see info box on p. 40).

So why the picture of the Swedish athletes? If you look closely, you can see that the five athletes are holding cardboard boxes up to the camera—boxes with the word MEDOX® printed on them. Svaboe smiles and shares what is presumably one of his favorite anecdotes: “Usually, you could wake Norwegian cross-country skiers up in the middle of the night and have them ski backwards—they’d still beat Sweden.” But at the →

“Many illnesses are caused by poor nutrition”

SJUR SVABOE, THE INVENTOR OF MEDOX®



True Blue

Anthocyanins are secondary plant substances that can be found in eggplants and blueberries, for example. The name is derived from the Greek words *anthos* (flower) and *kyáneos* (dark blue). Inside plants, they protect DNA, sugar, and proteins from ultraviolet radiation. They also attract insects and other animals that help the plant propagate itself.



The deep-blue berries are compressed. To keep the concentrated mass fresh, it is frozen before being processed

2006 Olympic Winter Games in Italy, he pointed out, the team struggled with a performance slump—and with a starting advantage for the Swedes. The Swedish team doctor had recommended that they take MEDOX® to stay in good condition. “I sent them 200 free packages,” the 76 year old recalls. The result? The Swedes defeated the Norwegians—who were the clear favorites—in the women’s and men’s team sprint events.

Supplying the human body with essential nutrients has become a lifetime preoccupation for Svaboe, who once studied mathematics. “The roots of many diseases, like arteriosclerosis or diabetes, lie in improper nutrition,” he says. That society is slowly rethinking these issues is evidenced by how the global market for nutritional supplements has developed, generating sales of over €300 billion in 2018.

The more important the market, the louder the criticism of its products: Anyone looking up the term “nutritional supplements” online will quickly find many articles denouncing effects that don’t scams and materialize. The idea is put forward again and again that healthy people with a balanced diet and a health-conscious lifestyle do not need to take nutritional supplements.

“That’s true in theory,” says Dr. Laura Headley, a nutrition scientist at Evonik. “In a perfect world, we’d all have perfect diets.” But what about people who do not eat fish twice a week? Or people who live in a country where the sun barely shines in the winter and, as a result, lack sufficient vitamin D? Plus, every human body has to be considered individually, as Headley points out. Nutritional supplements can help offset any deficits, she adds.

An awareness of the importance of preventive health care has grown over the past several years—not least because people are growing older. The health of the world’s population since the early 1990s has been investigated in a study prepared by Harvard University, the World Health Organization, and the World Bank entitled “Global Burden of Disease.” One of the study’s findings is that our chances of reaching old age are higher than ever before: life expectancy around the world grew from around 66 to 73 years between 1990 and 2017. That does not necessarily mean that quality of life has improved, however: The study showed that people are healthy for only slightly over 63 of those 73 years.

COUNTERACTING MUSCLE LOSS

As age increases, so does the likelihood of chronic disease, as well as cognitive and physical impairments. At present, for example, 50 million people worldwide suffer from age-related muscle loss. Known as sarcopenia, the condition can lead to problems such as loss of strength, increasing frailty as well as susceptibility to falls. The European Working Group on Sarcopenia in Older People fears that the number of affected individuals could rise to over 200 million by 2060.

Physical exercise and optimized nutrition are considered especially important for keeping sarcopenia in check. One focus of nutrition science until now has been on essential amino acids and their importance in building muscle. Some amino acids can only be obtained through the diet, and nutritional supplements such as leucine, which belongs to the group of branched-chain amino acids (BCAAs), are intended to mitigate that deficit, says Headley. The nutrition scientist then notes, however, that after being supplied with nutrients the muscle naturally undergoes a process of breakdown and synthesis again. This process releases ammonia, which can promote fatigue and stresses the brain and kidneys.

Strengthen muscles or protect the kidneys? Evonik hopes to resolve that dilemma with MYOLUTION®, a nutritional supplement that is soon to be launched on the US market. The mixture of three branched-chain keto acids (BCKAs) has a similar impact on muscle development as BCAAs. The product does not contain any



At MedPalett, the anthocyanins from the berries are carefully concentrated. Before being dried, they form a thick syrup

nitrogen that can be converted to ammonia, however (see box on p. 42). “The combination is expected to help support muscle synthesis and reduce stress on the brain and kidneys,” says Headley.

Evonik’s Health Care Business Line has a great deal of experience in manufacturing BCKAs for the pharmaceuticals industry—its core competencies include not only chemical synthesis routes but also fermentation and crystallization processes. MYOLUTION® makes the company one of the first manufacturers to offer branched-chain keto acids in a food product.

In addition to healthy aging, another issue that is increasingly capturing the public imagination is that of good nutrition early in life. The Global Burden of Disease study brought to light the fact that more than half of all deaths worldwide can be traced to risk factors associated with lifestyle: hypertension, smoking, high blood



The finished MEDOX® capsules are packed and shipped directly in the production plant at MedPalett in Sandnes

sugar, and excess weight. Improper nutrition plays a key role here. In many countries, people consume too many sugary beverages, processed meat, and salt—while whole-grain products, nuts, fruits, and vegetables are not on the table often enough.

Poor nutrition can often be remedied with a change in eating habits; certain nutrients such as omega-3 fatty acids can also be consumed in the form of a nutritional supplement. In AvailOm®, Evonik has succeeded in concentrating the effective amount of essential fatty acids in two large fish oil capsules into one small tablet (see article on p. 32).

The market is increasingly oriented toward knowledgeable consumers. According to a study conducted by the Leibniz University of Hanover, the majority of people who take nutritional supplements are well informed and use the products responsibly. Monitoring health status and personal performance using a smartphone app or fitness tracker is an accepted part of life for many—especially in China. The nutritional supplement markets in the People’s Republic and in Japan are among the largest in the Asia-Pacific region. Nearly half the population of Japan used nutritional supplements in 2016. High population density and growing income have caused demand to increase, says BCC Research, a market research institute in the United States.

The largest sales market, however, is North America, where, according to the Council for Responsible Nutrition, 75 percent of all adults in the US regularly took nutritional supplements in 2018. In Germany, by comparison, that figure is roughly 25 to 30 percent. The trend toward DIY health care is fostered by the American health system:



A Gentle Alternative

From a nutritional perspective, branched-chain ketoacids (BCKAs) correspond to branched-chain amino acids (BCAAs). Both substances help to form proteins in the body and thus promote muscle development. BCKA is transformed into BCAA in the body. Because ketoacids do not contain nitrogen, there is no formation of the ammonia that could cause health problems.

While 90 percent of all Americans have health insurance, coverage of services is minimal, leaving many unable to pay their medical bills in the event of a severe illness. Interest in staying healthy is correspondingly high.

PRODUCTS WITH A PROVEN EFFECT

But do nutritional supplements really do what they promise? Because they are legally classified as food, they are not subject to government approval the way medications are. Directives such as those in the EU, with special regulations regarding ingredients and labeling for nutritional supplements, would provide a reliable framework, Headley believes. “Evonik only has products in its portfolio that have been scientifically demonstrated to improve human health.”

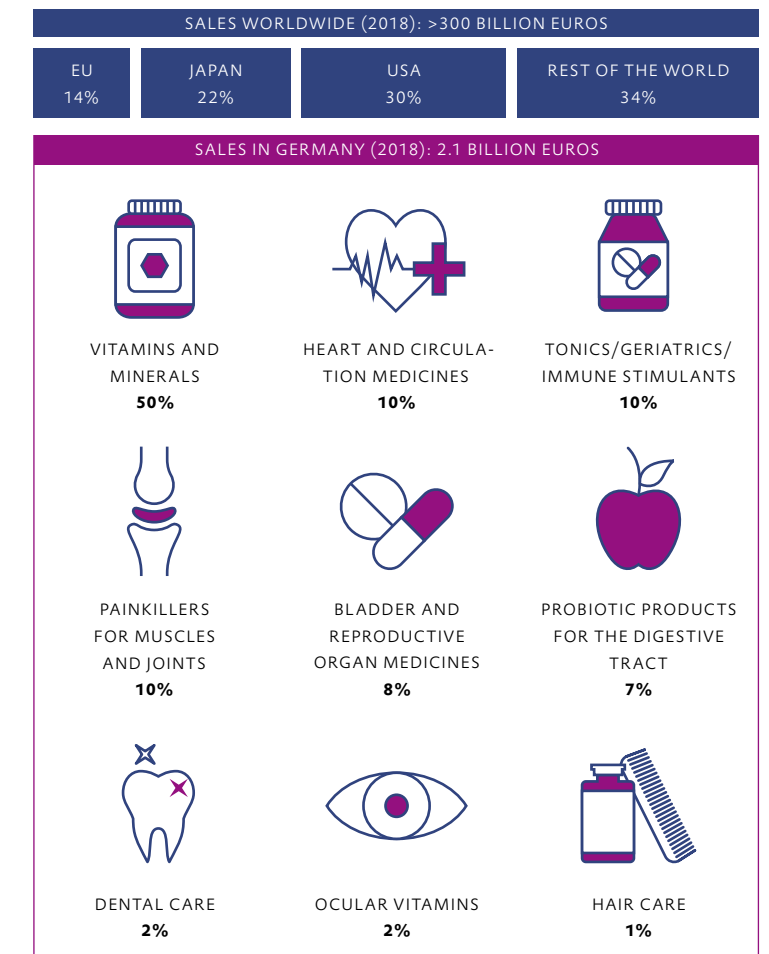
The health effects of anthocyanins from dark berries, for instance—the primary component of MEDOX®—have thus far been investigated in some 20 independent, placebo-controlled, double-blind studies at university hospitals. “These have shown that taking anthocyanins leads to lower LDL-C—so-called ‘bad cholesterol’—and increased HDL-C—‘good cholesterol,’” says Einar Bakstad, the research director at the Biolink Group, which included the MEDOX® producer MedPalett before the company was acquired by Evonik. “That’s particularly interesting with respect to cardiovascular diseases,” notes Bakstad, a professor at Norway’s University of Stavanger who teaches synthetic organic chemistry. The University of Stavanger is currently collaborating with Kings College London on a study investigating the influence of MEDOX® on dementia prevention. The thesis is that taking highly concentrated anthocyanins could slow down the development of dementia. The results are expected in 2020.

What makes MEDOX® special, says Einar Bakstad, is the multistage refinement process, which leaves the sensitive ingredients from the berries intact, in high concentration. The product from Norway is striking a chord: According to BCC Research, consumers are increasingly turning to natural ingredients in the conviction that these will deliver greater bioavailability with no side effects. “Nutritional supplements can help prevent risks,” says Headley. “It’s all about taking a measure of control over your life.” Just like those Swedish cross-country skiers who snatched the gold from the Norwegians in 2006. —

Physical Training

Where nutritional supplements do their work

Source: KPMG 2015, IQVIA 2019, own calculations—figures rounded



In the harsh climate of Scandinavia, the berries form many anthocyanins