Jungbunzlauer

From nature to ingredients®

facts

What we didn't know about minerals – a consumer study about mineral perception

Abstract

As a leading manufacturer of organic minerals, Jungbunzlauer performed a consumer study with more than 1,400 participants in order to better understand consumer knowledge, perceptions and preferences in respect of minerals. The survey provides insights from the USA, the UK and Germany into consumer opinions of minerals in supplements, fortified beverages and food. This fact sheet describes the results of the study, allowing our customers to exploit the insights for a more targeted marketing of products that contain organic minerals from Jungbunzlauer.

Introduction

Minerals have diverse functionalities in the human body that are necessary for its overall health. Thus, we need the daily intake of a broad range of minerals to avoid mineral deficiencies, which might result in disease symptoms and common disorders.

Jungbunzlauer, as a leading manufacturer of organic minerals, wanted to understand if consumers

- are aware of the importance of minerals for their health
- have knowledge about the advantages of organic minerals
- prefer organic minerals over inorganic minerals
- are open to food and beverage mineral fortification or supplementation.

The company asked more than 1,400 consumers to participate in two online surveys on minerals. The surveys were conducted in cooperation with Döhler GmbH Sensory & Consumer Science (referred to in the following as “Döhler”) and students from the Aalen University Business Development course (referred to as “Aalen University”). This fact sheet describes in detail the results of the two online surveys.

Key results and recommendations for action

Healthy nutrition and minerals are a major topic for consumers. However, only 40% of the respondents believe that their mineral supply is sufficient to cover their needs. This indicates that there is an unmet demand among consumers to increase their mineral supply, which provides a growth opportunity for products containing high levels of minerals. Since the vast majority of the panellists wished for more information on the mineral content of the products they purchase, it is recommended to add the mineral content of the final product to the nutritional information, as it is already done in the USA. Moreover, consumers have only limited knowledge of the health benefits of minerals. Thus, if possible, it is helpful for consumer education to add health claims on the fortified products.

However, it seemed that information about the exact mineral compound in the product might overload consumers, who are generally not aware of the specific characteristics of compounds and the differences between them. As consumers have very positive associations with the term “organic minerals”, it is recommended to advertise the final product as containing “organic” minerals instead of their specific form. Furthermore, it might be a good idea to avoid or to explain the rather technical term “bioavailability” when describing the advantages of organic minerals. For example, bioavailability can be described as “minerals that can be easily absorbed”. Furthermore, the results indicate that mineral supplements and mineral fortified versions of food and beverages are on the rise, which confirms that these applications offer an opportunity for growth.

Results and Discussion

Diet and mineral consumption in general

"Healthy nutrition and minerals" is a major topic for almost all consumers

The Aalen University panellists were asked how important a healthy diet is to them. An impressive 93% of the respondents answered that healthy nutrition is "important" or "rather important" to them. Moreover, for 92% of the study participants the topic of minerals was important. Surprisingly, only 40% of the respondents believed that their supply of minerals is sufficient. This result is even more remarkable when taking into account that the panel was very highly educated and health-sensitive. It clearly shows that there is a need for a greater mineral supply.

This is underlined by the statement by two thirds of the Döhler panellists that mineral content is either very important or important in their purchase decision (figure 1). The addition of minerals to products in order to meet this demand is therefore recommended.

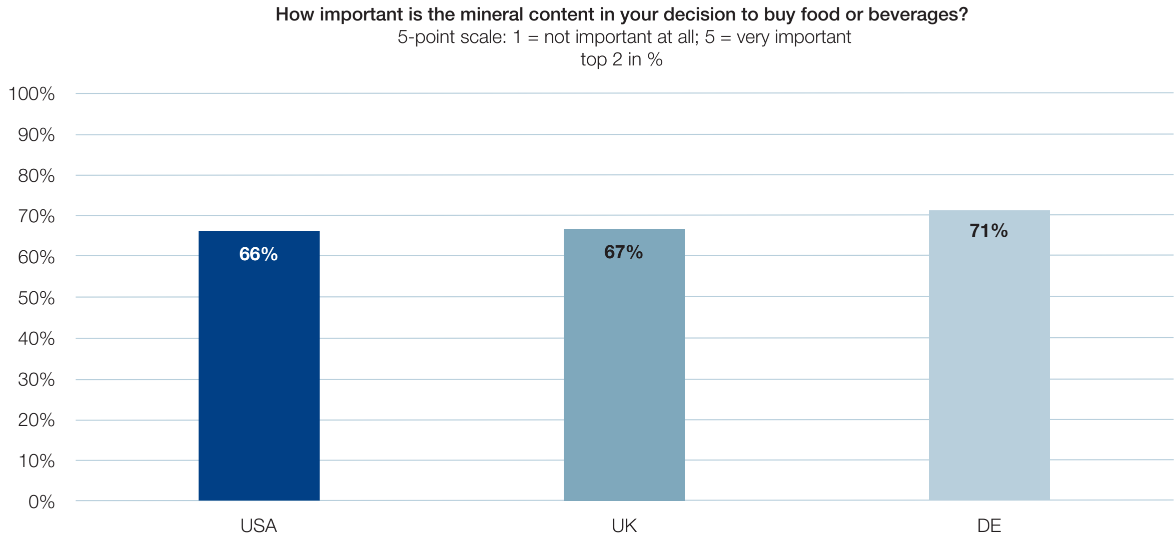

Figure 1: Mineral content and purchase decision
856 participants (Germany: n=253 | UK: n=252 | USA: n=351) were asked how important the mineral content is for their decision to buy a certain food or beverage. From all answers, the percentages of participants are shown for whom the mineral content is either very important or important for their purchase decision (top 2 on a 5-point scale) (Döhler).

Demand for mineral supplements, mineral-fortified food and beverages is on the rise

An increasing demand for supplements, mineral-fortified food, beverages and plant-based products was detected in the survey. About 30% of the panellists in the UK, the USA and in Germany stated that they intended to increase their consumption of these products in future (Döhler).

When asking specifically which minerals consumers intend to increase in their diet in future, 68% of the panellists in the USA plan to consume more calcium and 59% will consume more potassium. In Germany, 66% of the panellists intend to increase their magnesium consumption and in the UK, 49% of the panellists wanted to increase their calcium consumption (Döhler, figure 2).

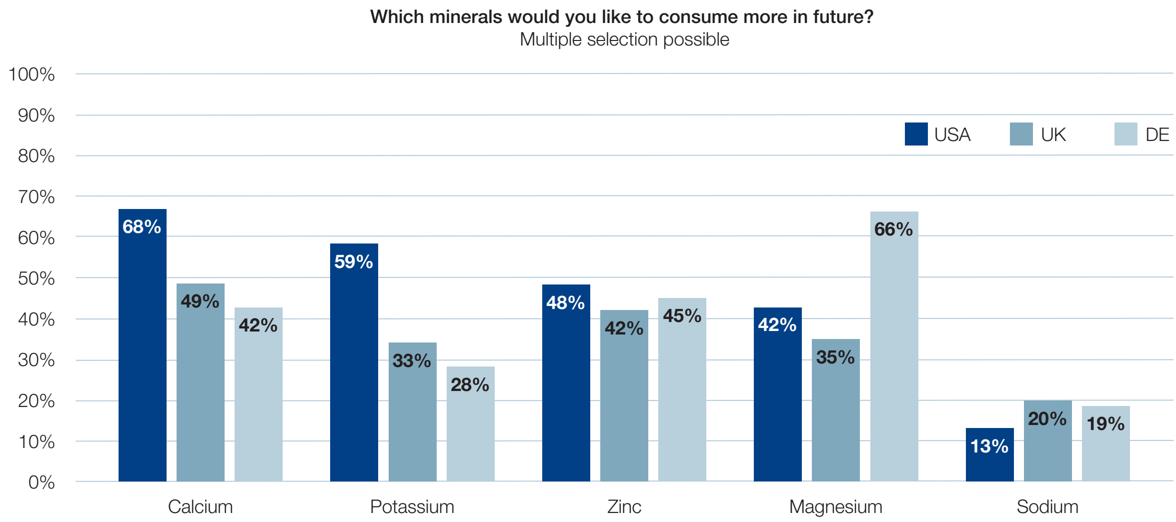

Figure 2: Increasing mineral consumption
856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked which minerals they would like to consume more in future. Multiple selection was allowed (Döhler).

These results indicate that supplements and mineral-fortified products promise to be very successful.
Based on the feedback from the panellists, fortification of food and beverages with calcium is recommended especially for a target market in the USA and UK, while magnesium fortification is recommended in Germany and potassium in the USA.

Consumers want minerals to support their overall physical health

The panel was asked why they typically take minerals. The most important reason for mineral intake was the support of overall physical health, with mental wellbeing coming second, followed by supporting health during a specific life stage, as for example pregnancy, and also to manage stress (Döhler).

When consumers were asked for more specific reasons for their mineral-fortified food or supplement consumption, they revealed high expectations of the benefits of minerals to their health. Immune health was chosen as the most important benefit, followed by bone health (Döhler, figure 3).

These results show that consumers primarily intend to increase their overall physical health when they seek out minerals. The potential benefits to overall health should therefore be highlighted when advertising mineral-fortified products. Panellists chose immune health as the most important specific health benefit of mineral consumption. However, the answers were received during the Covid-19 pandemic, which might explain why immune health was of utmost importance. Nevertheless, products with immune-boosting properties, as for example zinc-fortified food, might be especially successful.

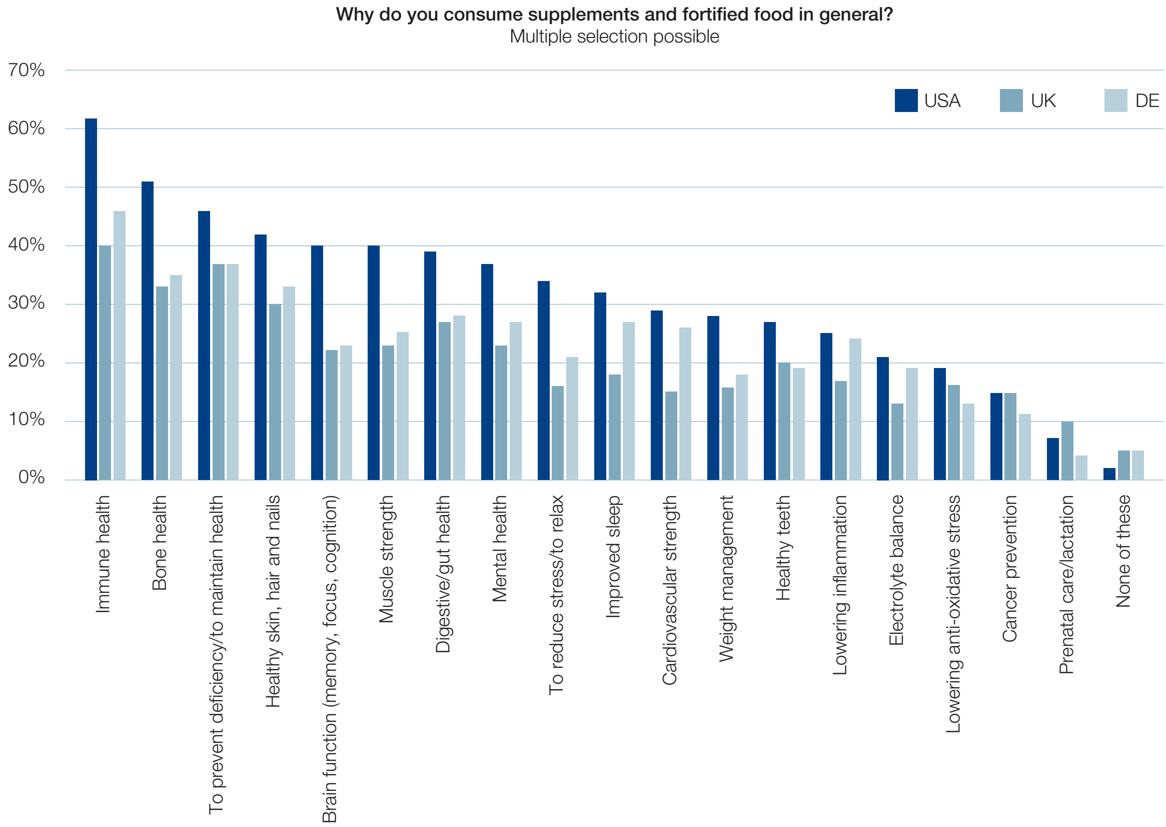

Figure 3: Motivation for supplement and mineral-fortified food intake

856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked why they consume supplements and mineral-fortified food. Multiple selection was allowed (Döhler). Knowledge about the function of minerals and advantages of organic minerals.

Consumers have limited knowledge about minerals
In order to understand the level of education on minerals, panellists were asked to select the health claim associated with iron, potassium, magnesium, calcium and zinc in the body. Interestingly, we found differences between the countries.

The majority of the German panel from Aalen University, which had a very high academic rate, assigned each mineral to its corresponding functionality correctly. The only exception was potassium, for which only 55% of the respondents were able to select the correct health claim.

Similarly, the participants from the Döhler questionnaire were not aware of the health advantages of potassium. Nor were they aware of the benefits of magnesium, with the exception of Germany, where 60% of the panellists correctly assigned the health claim for magnesium. Most panellists from all three participating countries knew about the functions of calcium and about 50% were aware of the health advantages of zinc and iron.

Based on these results, there is a clear need for consumer education about the functionality of potassium. A probable explanation for the function of magnesium being well known to German panellists but not in the panellists from the other countries is that this is caused by the effect of very successful advertisement of magnesium supplements in Germany in the past. This would prove that consumer education is effective and might be a good way to sensitise consumers regarding the importance of a specific mineral.

Interestingly, the intention to consume more of a certain mineral strongly correlates with the awareness of its health benefit. It is therefore strongly recommended that health claims be printed on the final product packaging in order to increase consumer knowledge of the benefits of the minerals.

Consumers have very positive associations with and a higher willingness to pay for organic minerals
Seventy-seven percent of the Aalen University panellists were not aware of the advantage of organic minerals over inorganic minerals. However, they had very positive associations with organic minerals: high quality, more naturalness and healthiness. Of most importance is the fact that consumers even indicated a willingness to pay more for organic minerals (figure 4).

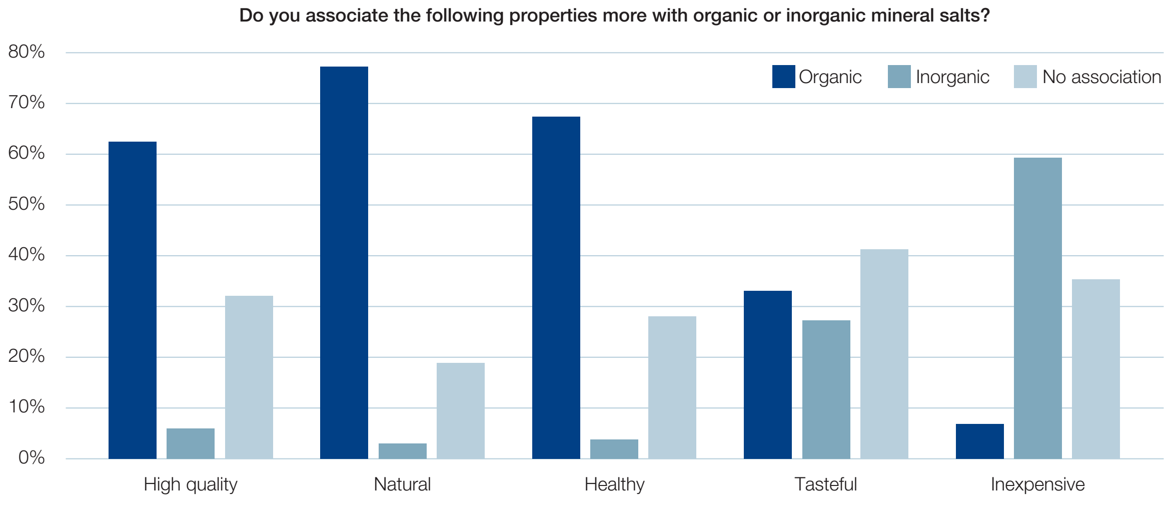

Figure 4: Associations with organic versus inorganic minerals
554 panellists were asked which properties they associate more with organic or inorganic minerals (Aalen University).

It is therefore strongly recommended that the term "organic minerals" be included in advertisements when products contain Jungbunzlauer minerals. It is equally important to educate consumers on the advantages of organic minerals, since the majority does not seems to be aware of them.

Consumers do not know what bioavailability means but are willing to pay more for higher bioavailability
Many of the Aalen University panellists were not aware what bioavailability means and only 50% linked it to organic minerals. However, 62% of the panellists indicated a greater willingness to pay for higher bioavailability. It is therefore recommended that additions such as "readily absorbed organic minerals" be applied in marketing or to explain what "bioavailability" means.

Consumers wish for more information on the mineral content of products
Status now is that 56% of the panel do not pay attention to the mineral content of the food they purchase. This is mainly because there is often no information on the mineral content on the packaging of food and beverages, in contrast to their fat, sugar, salt and calories content. More than 80% of the respondents would appreciate a clearer communication of the mineral content of a product. Consequently, it seems necessary to include the mineral content on the nutritional label.

Mineral perception and preferences

Consumers do not know the difference between mineral forms
To understand whether consumers distinguish between the different forms of minerals, the Döhler panellists were asked how much they like carbonates, lactates, citrates, phosphates, oxides, gluconates, sulphates and chlorides. The results show that these questions seem to overwhelm consumers. Panellists did not report a preference for any of these substances. In a next step, they were asked about their liking for specific minerals, for example magnesium lactate. Again, no differences in preferences were detected. Finally, the panellists were asked how they like an oat-milk recipe with different calcium sources. No difference was found in their liking for calcium citrate, calcium phosphate or calcium carbonate.

In the Aalen University survey the highly educated panel was asked the same question but also allowed as an answer "no preference because I do not know the difference" or "no preference, although I do know the difference".
A compelling 77% of the panellists did not have any preference since they did not know the difference.

Since consumers appear not to know the difference between the different forms of minerals and do not show preferences for a certain mineral form, it is recommended that the specific mineral form be avoided in advertising. Instead, the more general term "organic minerals" should be used, together with an explanation of their benefits.

One exception is the supplement industry in the USA, where consumers pay premiums for citrates. In fact, when directly comparing calcium phosphate with calcium citrate, consumers in all three countries preferred calcium citrate to calcium phosphate. Therefore where a product containing a citrate is in competition with one containing phosphates, it might be advantageous to state the specific mineral form, to take account of this preference.

Applications

In order to understand how consumers try to meet their mineral needs, panellists were asked if they seek out food rich in minerals, supplements or beverages rich in minerals in order to cover their body's demand for minerals. It turned out that all three applications are of importance meaning that many consumers seem to use more than one way to cover their mineral demand. (Döhler, figure 5)

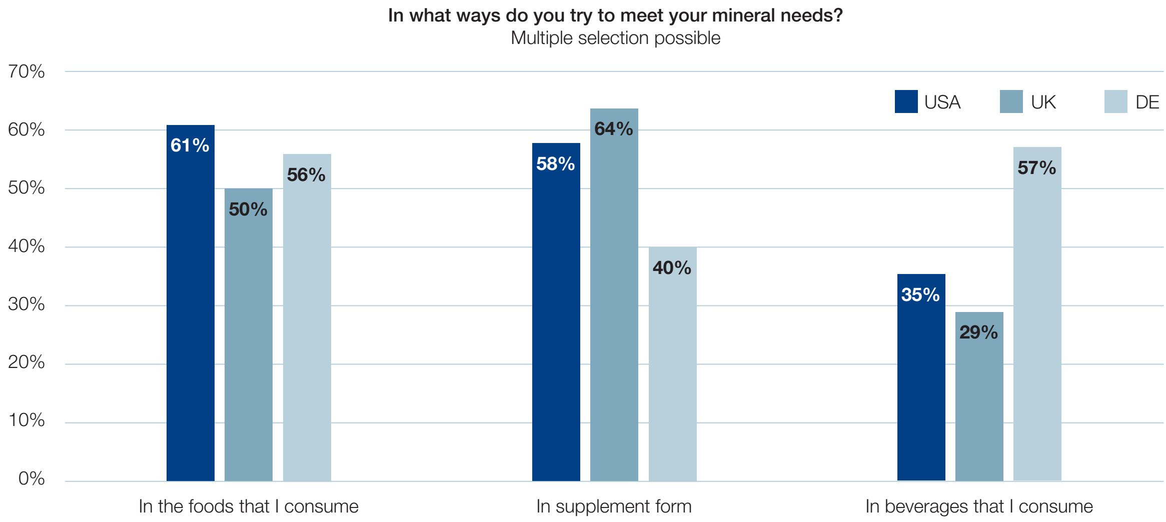

Figure 5: How consumers intend to meet their mineral needs
856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked how they try to meet their mineral needs (Döhler).

To understand consumption and expectations with regard to the applications supplements, fortified food and fortified beverages, the panellists were asked specific questions about these applications. In the following, the results for each application are described.

Supplements

Panellists from the USA, the UK and Germany were asked how often they consume supplements.
Importantly, this question was also a selection criterion to participate in the study. Sixty percent of the panellists in the USA and 100% of the panellists in the UK were selected because they consumed supplements at least several times a month. For the German panel, supplement consumption was not a selection criterion. Therefore it is not surprising that the daily consumption rate of supplements is much higher among the panellists from UK and the USA compared to the German panel.

In detail, 70% of the panellists in the USA consumed supplements at least once a week and in the UK 89% of the panellists consumed supplements at least once a week. Forty percent of panellists in the USA and 48% in the UK consumed supplements on a daily basis. Moreover, 57% of the German panellists reported consuming supplements at least once a week and 21% on a daily basis. Only 14% of the German panellists never consume supplements (Döhler, figure 6).

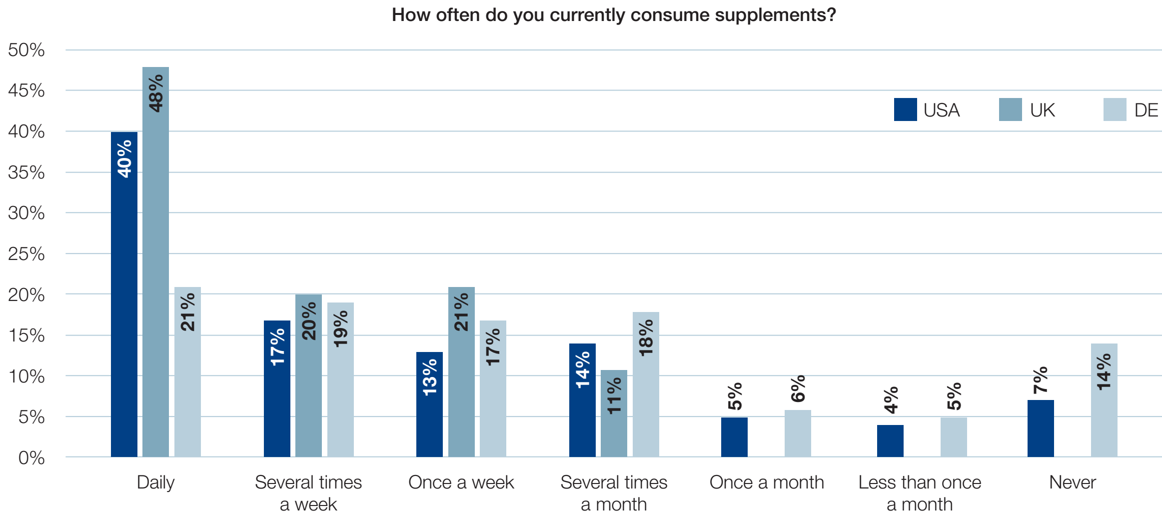

Figure 6: Frequency of supplement consumption by the panellists
856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked how often they consume supplements. Only single selection was allowed (Döhler).

In the next step, the panel's intention to consume more supplements in future was determined. In the USA 38% of the panellists said they wanted to consume more or much more. The same answer was given by 27% of the panellists from the UK and 30% of the panellists from Germany (Döhler).

These results show that supplements are considered an important way to cover mineral needs. Moreover, about one third of the panellists said they intend to increase their supplement consumption. This indicates that the supplement market has a potential to grow further.

When looking at supplement formats, tablets are still the most preferred choice, especially in the UK. However, in the USA gummies and capsules are also of great interest. In Germany, capsules, liquid formats and powders are of additional interest. Consumers are either not very familiar with gels, shots and lozenges, or they do not prefer these formats (Döhler, figure 7).

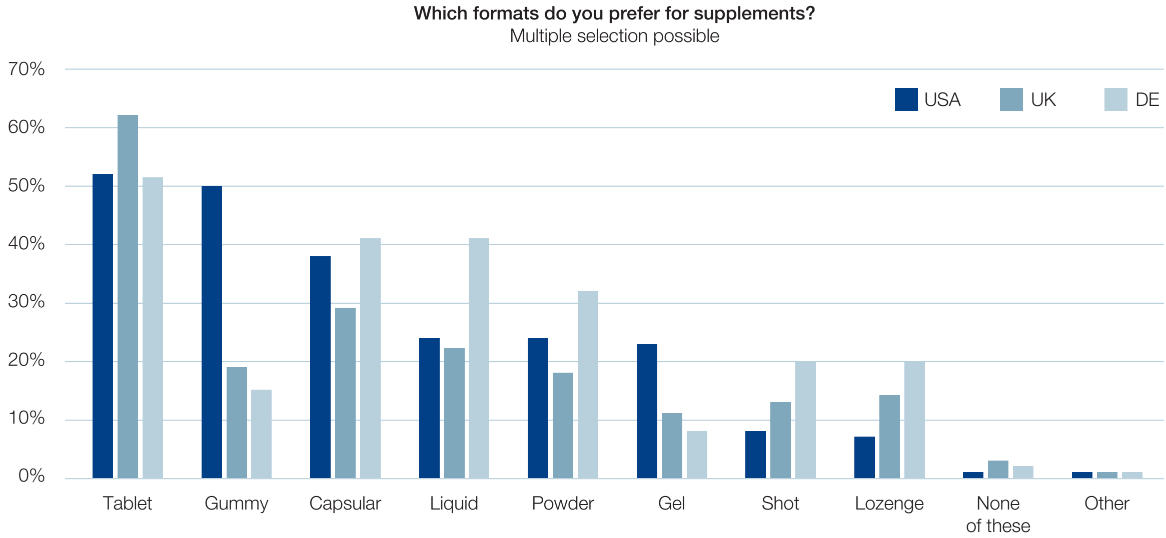

Figure 7: Preferred supplement format
856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked how often they consume supplements. Multiple selection was allowed (Döhler).

Therefore, supplement producers are recommended to formulate supplements as tablets but also give new formats such as gummies, liquids, capsules and powders a try since they are of interest and might prove successful products.

Beverages

The majority of the panellists already consume fortified beverages. Only 11% of the US panellists, 29% of the UK panellists and 15% of the German panellists never consume fortified beverages. A significant share of the panellists already drinks fortified beverages several times a month or even daily. Thus, the consumption of fortified beverages is already high (Döhler, figure 8).

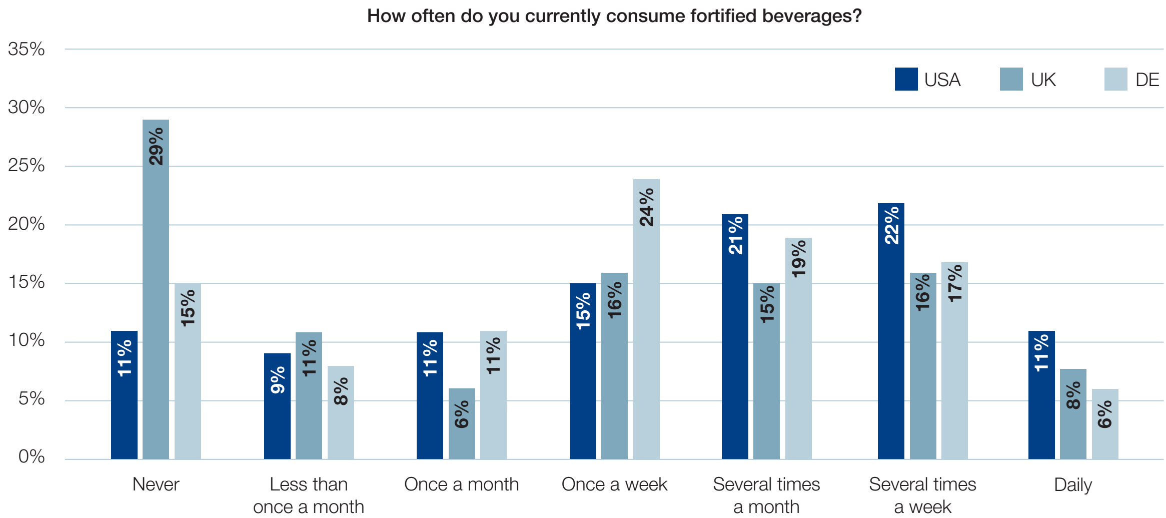

Figure 8: Consumption of fortified beverages
We asked 856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) how often they consume fortified beverages.

Specifically, mineral-fortified juices and/or juice-containing beverages and smoothies (55%) were preferred over soft drinks (29%), sports drinks/powder (20%) and energy drinks (18%) (Aalen University, figure 9).

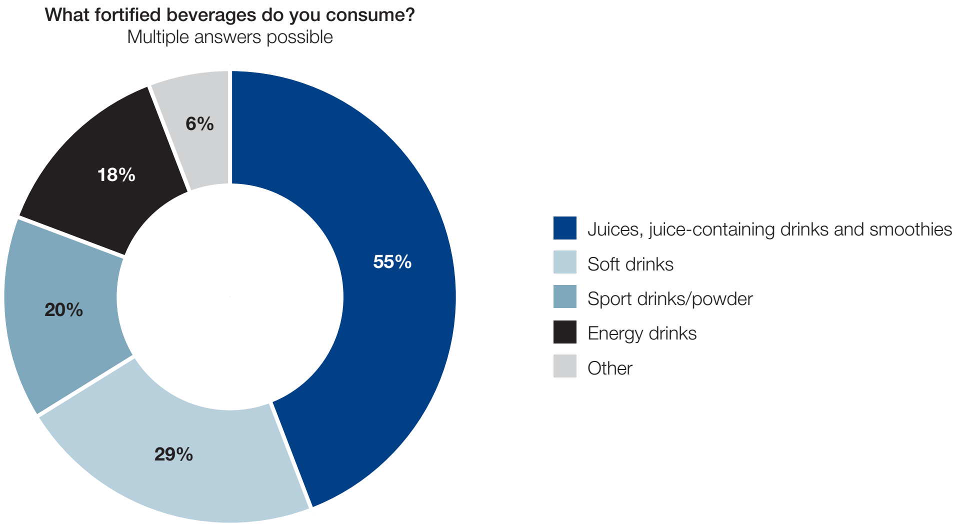

Figure 9: Fortified beverages categories
554 panellists were asked which fortified beverages they consume and 711 answers were given (Aalen University).

Mineral-fortified beverage consumption is set to increase. Among the panellists, 38% of the consumers in the USA, 26% of the consumers in the UK and 30% of the consumers in Germany said they intend to increase their consumption of fortified beverages (Döhler, figure 10).

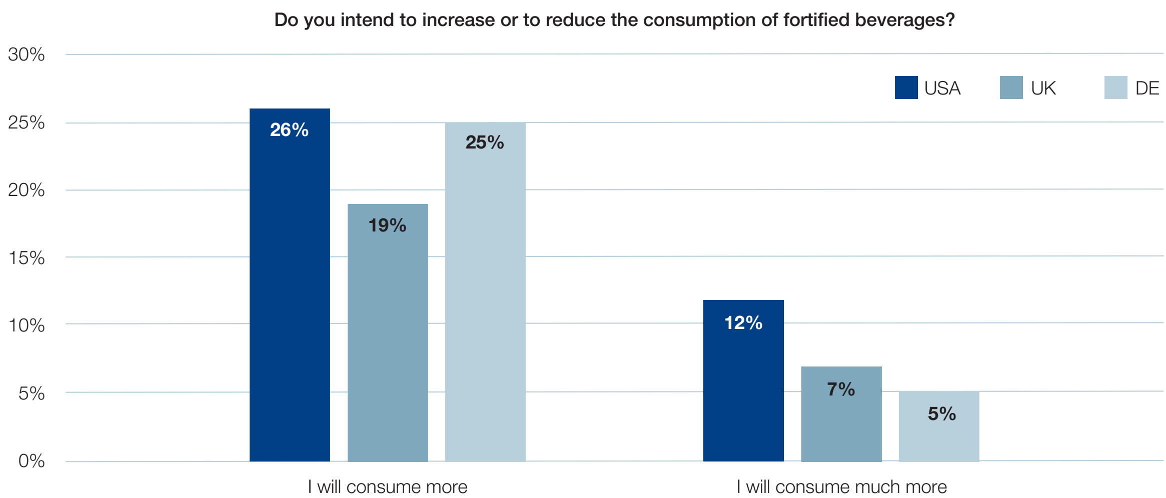

Figure 10: Intended consumption of fortified beverages
856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked about their intention to increase their fortified beverage consumption. Only single selection was allowed (Döhler).

These results indicate that the fortified beverage market has a potential for growth and that in particular fortified smoothies might be successful products.

Food

The current consumption of mineral-fortified food exceeds that of the other two categories (supplements and beverages). In the USA 40% of the panellists reported consuming mineral-fortified food at least several times a week. In the UK this counts for 36% and in Germany for 26% of the panellists. In all three countries, consumers stated their intent to increase their consumption of mineral-fortified food even further (USA 34%, UK 29% and Germany 34%). (Döhler, figure 11)

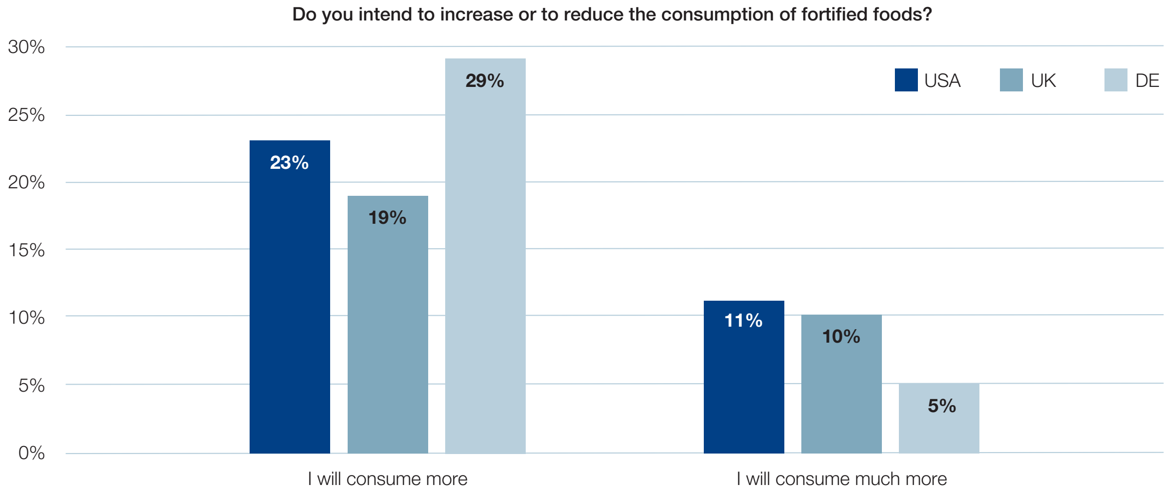

Figure 11: Intended consumption of fortified food

856 panellists (Germany: n=253 | UK: n=252 | USA: n=351) were asked about their intention to increase their fortified food consumption. Only single selection was allowed (Döhler).

Among mineral-fortified vegan food products, milk (58%) and meat (58%) alternatives are of major importance, while fish alternatives (11%) and egg alternatives (5%) play only a minor role up to now (Döhler).

These results show that consumers are open to mineral-fortified food. Moreover, they indicate that the fortified food market is set to grow and that fortified milk and meat alternatives are likely to be of greatest interest.

Methods

Questionnaire development
Two surveys were conducted in cooperation with Döhler GmbH Sensory & Consumer Science (referred to here as "Döhler") and students from the Aalen University Business Development course (referred to as "Aalen University"). Questionnaires for the survey were developed by the Special Salts and Business Development team of Jungbunzlauer in cooperation with these two partners. Both questionnaires were designed to provide answers to the following key questions:

- Are consumers aware of the importance of minerals for their health?
- Are consumers aware pf the advantages of organic minerals over inorganic minerals?
- Do consumers prefer organic minerals over inorganic minerals?
- Are consumers open to food and beverage mineral fortification and supplementation?

Survey
The online survey was conducted in December 2021, in English for the UK and the USA and in German for Germany. Participants took about 10 to 15 minutes to answer the questionnaires.

The questionnaires consisted of three parts.

The first part of the questionnaire was designed to pre-select participants. In the cooperation with Döhler, the aim was to recruit participants from the United Kingdom, the USA and Germany. Here, the panellists were pre-selected for experience with supplements and plant-based products. The United Kingdom was chosen as a focus market for supplements and therefore only consumers using supplements several times a month were included in the survey. Germany was chosen as the focus market for plant-based dairy products, and all participants from Germany were therefore selected because they consumed such products at least several times a month. For the participants from the USA, it was decided that 60% of the participants should use supplements at least several times a month and 60% of the participants should consume plant-based dairy products at least several times a month. In the cooperation with Aalen University, the panel was pre-selected for participants living in Germany who consume supplements and/or vegan substitute products and/or fortified drinks at least several times a month.

The second part of the questionnaire was designed to learn more about the diet and mineral consumption of consumers in general, as well as about their knowledge of the function of minerals. Questions specifically targeted the consumption and expectations of mineral-fortified food and beverages, vegan alternatives and supplements, as well as perceptions and preferences in relation to minerals.

The last part of the questionnaires surveyed socio-economic data such as the size of the household, diet style, income distribution and educational level.

Recruitment of participants and socio-economic data
Overall, a total of 1,410 participants participated in the two surveys. For the cooperation with Döhler, a panel provider recruited the participants and each participant received a monetary incentive. A gender distribution of 50% female and 50% male participants in each country (253 from the UK, 351 from the USA and 253 from Germany) was requested. Moreover, participants were pre-selected to give an age distribution of 50% in the age range 18 and 39 years and 50% between 40 and 65 years.

In the cooperation with Aalen University the aim was to recruit as many participants as possible. Participants were therefore recruited via Survey Circle, Survey Swap, Facebook groups for surveys, LinkedIn and Xing groups. Furthermore, contacts such as fellow students, family, friends and neighbours were asked to participate in the study. Importantly, Jungbunzlauer employees were excluded from the survey as participants without prior expertise in minerals were sought after. As an incentive the Aalen University panel was invited to take part in a raffle of five coupons of 50 EUR each from wunschgutschein.de. In this study, 554 completed questionnaires were received.

Limitations

Need for further research
In this consumer study, several topics were identified where further research would be helpful for tailoring a marketing campaign to a certain target group or for defining the optimal market price.

Interestingly, consumers appear willing to pay more for organic minerals and for greater bioavailability. Thus, in a next step it would be desirable to measure the willingness to pay for products that are fortified with organic minerals versus products that do not contain additional minerals or are fortified with inorganic minerals. It might also be helpful to determine how much consumers are willing to pay for greater bioavailability. Optimally, these questions would be answered through experiments.

The second point that needs further research is the definition of the target group. It was not possible to define a target group based on socio-economic data. It is likely that a psychographic approach, meaning a definition of the target group based on their values and beliefs or lifestyle, might be more successful. However, for this approach, individual interviews would be necessary instead of an online survey.

Representativeness
How panellists are recruited influences which people participate. Hence a panel provider was employed in the cooperation with Döhler and many different avenues were explored to recruit panellists for the cooperation with Aalen University. Nevertheless, the panels might be not representative for the general population for several reasons:

- Due to the pre-selection of the panellists, it is possible that the consumer group answering the online questionnaire was especially health-conscious. Their awareness of the importance of a healthy diet and their knowledge about diet might not be representative for the general population. Nevertheless, this focus group of consumers might be especially interesting for supplement, food and beverage companies since they are interested in health-related topics.
- The participants in the survey in cooperation with Aalen University, in particular, had a very high level of education. They were also very young and had a very low income compared to the average population. This indicates that many of the participants in this survey might be students who already have a Bachelor’s degree. Moreover, almost two-thirds of the panellists were female.
- In addition, the panel focussed on the UK, the USA and Germany. Results from other parts of the world might well be different in some respects.

Wording
From their feedback it became clear that panellists' reasons for preferences were based mainly on their associations rather than their knowledge. Although they did not know what "bioavailability" means, the word contains the term "bio" which is associated in Germany with "healthy", "natural" and "expensive". Similarly, in English, the term "organic" in "organic minerals" has a different meaning than in the context of "organic farming". Here, "organic" is also associated with "healthy", "natural" and "expensive".

Moreover, some consumers did not know the exact meaning of the term "minerals". They seemed to associate the term with "multivitamins and minerals" and were not able to differentiate between vitamins and minerals. Again, the associations with minerals are very positive since they are associated with "good for your health" or "necessary to maintain a healthy body".

Online survey
The consumer study was executed as an online survey in order to reach a greater number of participants. However, this results in several drawbacks. For example, panellists were not able to ask questions in case of uncertainties. Therefore, as part of the Aalen University study, some pre-tests were performed with the questionnaire to identify which questions were more complex to understand. It was observed that several panellists quit the questionnaire when asked about their knowledge of minerals. The panellists explained this by the fact that they did not want to give "wrong answers".

In order to prevent panellists giving random answers to questions in the survey, a control question was added in to the survey from Aalen University and responses from panellists who answered this question randomly were excluded from the analysis.

Summary

With the help of two online questionnaires several insights into consumer preferences, knowledge and awareness with regard to minerals were obtained. The results of the online surveys show the huge importance of minerals for consumers while at the same time there is only limited knowledge about organic minerals and their advantages or the meaning of good bioavailability. Nevertheless, they prefer organic minerals over inorganic minerals and are not only open to mineral-fortified food and beverages but actively seek them out. Based on these insights, recommendations for marketing and product development were provided.

Note of thanks

We thank the team of "Döhler GmbH Sensory & Consumer Science" for their expertise and for performing the Döhler study for Jungbunzlauer.
We also thank the Aalen University "Business Development" course organization team and participants for the very professionally conducted Aalen University study for Jungbunzlauer.

About Jungbunzlauer

Jungbunzlauer is one of the world's leading producers of biodegradable ingredients of natural origin. We enable our customers to manufacture healthier, safer, tastier and more sustainable products. Thanks to continuous investment, state-of-the-art manufacturing processes and comprehensive quality management, we are able to provide outstanding product quality.

Our mission "From nature to ingredients®" commits us to protecting people and their environment.

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