

Foreword

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Since the oral cavity is the entrance for food and the commencement of the digestive tract, it is obvious that there is some local interaction between food consumption and the status of oral tissues. In modern nutrition, the most important influence of food on oral health is the metabolism of fermentable carbohydrates to organic acids by acidogenic bacteria, which are organized in oral biofilms at the tooth surface. These acids dissolve the inorganic components of enamel and dentine, and if the healing potential of saliva is overstrained, dental caries is the consequence. This happens if fermentable carbohydrates are consumed too frequently. Consequently, caries could potentially be prevented by a reduction in the frequency of sugar intake. However, from a public health perspective, this has been shown to be a more theoretical possibility than a practical option. On the other hand, specific food ingredients/constituents can substantially contribute to healthy teeth since they can be delivered simultaneously or replace the harmful agent. As an example, fluoride-containing table salt has been proven to be an effective public health measure and has contributed to the considerable caries decline in Switzerland and Germany. Not only fluoride but also other substances influencing the balance of de- and remineralization of dental hard tissues as well as non-fermentable carbohydrates or substances affecting the composition of the oral microflora or the adherence of cariogenic microorganisms are options in caries prevention. In contrast to oral hygiene measures and

preventive programmes offered in the dental office, they have the potential to reach the whole population.

Another food-related disease affecting oral hard tissues is dental erosion. It is also a consequence of the misbalance of de- and remineralization at the tooth surface, but in contrast to caries without involving microorganisms. Dental erosions are developing by the direct detrimental effect of dietary acids such as citric or phosphoric acid. Since the usage of these acids in foods and drinks is considerably increasing within the last decade, the incidence of dental erosions is rising as well in developed countries. This becomes a noteworthy challenge to the dental profession. Due to the fact that both diseases, dental caries and erosion, can be positively influenced by measures reducing demineralization and promoting remineralization of enamel and dentine and that this can be provided by certain food ingredients, there is a large research field for functional food, and some scientific findings have already found their way into daily practice.

In contrast to caries and erosion, the aetiology of other diseases affecting the oral cavity is hardly locally influenced by food properties. However, diseases of the oral mucosa can be positively and negatively influenced by food characteristics. For example, dry mouth can be alleviated by chewing fibrous or acidic food, both stimulating saliva flow. But since acidic food may cause dental erosions, it can only be recommended if the patient has no natural teeth in his mouth. This example makes clear that diet counselling with the perspective of diseases of the oral mucosa is not a public health topic, but belongs to the individualized consultation in the dental office.

The last interaction between food and oral health, which is discussed in the present supplement of the European Journal of Nutrition, is dealing with the periodontium. Inflammatory periodontal diseases are the second most

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prevalent disease of the oral cavity and are the number one reason of tooth loss in the second half of life. Apart from severe malnutrition like scurvy, which is no longer prevalent in developed countries, periodontitis is not caused by food habits. In fact, there is a strong relationship between the presence of specific bacteria and periodontitis. On the other hand, nutritional components could locally act against these bacteria and potentially prevent or slacken the development of periodontitis. Some food components and

probiotics have shown some activity against periodontal pathogens, but there is still a long way of research to go until clinically relevant results may come up.

In conclusion, food plays an important role in oral health, both in causing and preventing oral diseases. The current status of knowledge in this field is summarized by excellent scientists in the present supplement of the European Journal of Nutrition.