

AJN Position Paper on Dental Health with Particular Reference to Sugars in Fruit Juices

Fruit Juice and a Healthy Diet

As a result of the international debate about diet and healthy lifestyles, the role of fruit juice in a healthy diet has come to the fore. The debate in most developed countries has encouraged the implementation of national programmes to develop healthy eating and to promote the daily intake of fruit and vegetables given their proven positive impact on health. Fruit juices, which are derived 100% from fruit, have been endorsed as a valuable contribution to a healthy diet and a 150ml serving is equivalent to a daily portion of fruit. They contribute the primary source of Vitamin C and are important sources of a number of essential minerals and other health-giving constituents, e.g. anti-oxidants and folate.

Fruit Juice and Dental Health

Fruit juices have been overwhelmingly endorsed as part of a healthy diet. However, concerns have been raised that the acid and sugar content of fruit juice could have a deleterious effect on dental health. This paper seeks to explain how the consumption of fruit juice as part of a balanced diet can be compatible with good dental health.

Dental disease

Dental caries is the type of disease affecting teeth which is mediated by bacteria forming a plaque on the tooth. Carbohydrates e.g. sugars, bread are fermented by the bacteria to an acidic solution, which demineralises the tooth surface, which leads to tooth decay. Dental erosion refers to the gradual wear of teeth by acids from food, which is not mediated by bacterial plaque. There is also a process called re-mineralisation whereby saliva, certain alkaline foods, and most notably fluorides are able to reverse the decay processes noted above, replacing the lost tooth minerals. Foods that are implicated in tooth decay are termed cariogenic.¹

Dental disease and diet

Diet plays a role in the development of caries and erosion.² The role of diet is, however, of subsidiary importance compared with the use of fluoride, the amount of saliva in the mouth, and overall oral hygiene factors. Dr. Van Loveren of the Academic Centre for Dentistry, Amsterdam goes as far as stating that if these oral hygiene factors combined with the use of fluoride are adequate, then diet is of little importance.³ Dr. KG Konig of the University Medical Faculty, Preventive and Community Dentistry, Nijmegen also argues cogently for this view when he says that 'there is no need for population based dietary guide-lines for sugar intake with regard to dental health, providing fluoride intake is adequate, and there is good oral hygiene'.⁴

Fruit versus Fruit Juice

There is a belief that eating whole fruit poses a lower risk of dental impact. This view has been countered by dental experts in London who have established experimentally that there is no difference in the amount of sugar and acid generated in the saliva between raw whole fruit and fruit that had been pulped.⁹

Sugar and fluoride

It has been observed from a large number of studies carried out within the last 20 years that there is only a weak correlation or no correlation between sugar consumption and caries incidence.³ The steep rise in the numbers of caries-free children occurred when fluoride became available. During that period sugar consumption was continuously high.³ The Swedish Karlstad prevention programme established that Daily average sugar consumption remained unchanged between 1960 and 1990. The consumption of fruit juice and other non-alcoholic beverages, however, amongst other sweet foods, increased significantly, but there was a marked decrease in the incidence of caries. This has been observed in several countries.⁵ These observations were almost completely explained by the availability and use of fluoride.

Frequency of ingestion

There are, however, important behavioural characteristics which can increase the actual cariogenicity of potentially cariogenic foods. The frequency of ingestion can be significant. Consuming cariogenic foods just before sleeping increases cariogenic action. Putting sugar-containing drinks into a baby's feeder which resides in its mouth for long periods will encourage erosion and caries.¹ It is unrealistic to believe that children can totally eliminate cariogenic foods from their diets in the interest of better dental health. Providing they have a nutritionally balanced diet alongside good oral hygiene practice, most children should be able to enjoy sugar-containing foods and beverages without any risk to their dental health.¹

Good tooth practice

There are several good practices, recommended by dental experts, that can be adopted, which will minimise the risk of dental erosion or caries:

- Avoid drinking sugar-containing beverages just before bedtime. Salivary flow is decreased during sleep, making teeth more vulnerable to demineralisation.
- Try to limit the frequency of ingestion of sugar-containing beverages to 3 – 4 times a day.
- Consume sugar-containing beverages as far as possible with meals. Other more alkaline foods, e.g. cheese, milk will ameliorate the potential effects of sugars and acids.¹⁰
- Ensure good saliva flow which optimises the remineralisation process by drinking enough fluids to stay hydrated.

- It is unwise to brush teeth directly after consuming an acid food or drink, since the enamel can be temporarily weakened by being exposed to these foods.
- Brush teeth twice a day with a fluoride toothpaste.

Conclusion

It is clear from authoritative, recent studies that it is impractical and illogical to 'blacklist' sugar-containing foods in relation to human diet, and dental health. A widely accepted official view is that, there are not good foods or bad foods, only bad diets.⁷ Thus, sugar-containing drinks have a place in a diet, especially when, as in the case of fruit juices there are intrinsic health-giving properties derived from, for example, vitamins, folic acid, fibre and many other components. It is equally clear that for the great majority of people, 'good tooth practice' will enable them to benefit from sugar-containing foods in their diet without succumbing to dental disease.

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