Eating cheese: does it reduce caries?

The cariostatic potential of cheese: cooked cheese-containing meals increase plaque calcium concentration
P. J. Moynihan, S. Ferrier, and G. N. Jenkins Br Dent J 1999; 187: 664-667

Objective
Eating cheese by itself increases plaque calcium concentration — which is probably one mechanism of the well-established action of cheese in reducing experimental caries. The objective of the present study was to determine whether consumption of cheese as part of a cooked, mixed meal (ie as it is habitually consumed) is able to increase plaque calcium concentration.

Design
Plaque samples were obtained from 16 adult volunteers before and 5 minutes after consumption of either a 15 g cube of cheese, one of two cheese-containing test meals, or one of two control meals. Each subject tested each of the four meals on a separate occasion. Plaque calcium concentration was measured using atomic absorption spectrophotometry.

Results
The test meals increased plaque calcium concentrations to a significantly greater magnitude than the control meals ($P < 0.05$). A non-significant trend was observed towards a larger magnitude of change in plaque calcium concentration in the 8 subjects with the lowest, compared with the 8 subjects with the highest baseline concentration.

Conclusion
The findings suggest that cheese-containing meals increase plaque calcium concentration and thus probably protect against dental caries.

In brief

- Consumption of cheese-containing cooked meals increases plaque calcium concentration.
- Eating cheese as part of a cooked meal (or on its own) may protect against dental caries.
- A small amount of cheese (15 g) is effective — this will not significantly contribute to fat intake.
- Recommending the consumption of cheese-containing meals is a positive approach to caries prevention.

Comment

The concept of protective foods is particularly resonant at this moment, with evidence of the beneficial effects of anti-oxidants against cancers and heart disease giving rise to (sometimes exaggerated) claims for the benefits of red wine, olive oil and greens to name the most popular examples. In oral health, particularly caries, protective effects have been attributed without justification to foods which were believed to remove plaque — apples, celery etc. However, the largest body of evidence relates to the protective actions of milk products. These include protection of the enamel by casein phospho-peptides, stimulation of salivation by flavoured cheeses, reduction of plaque formation by milk lipids, and enhancement of plaque calcium levels — which by opposing enamel dissolution acts to reduce demineralisation and enhance remineralisation. These beneficial actions have been demonstrated in *in situ* cariogenicity tests, and clinical surveys have shown an association between low caries prevalence and consumption of milk products, including cheese.

This paper provides further evidence for the incorporation of calcium from cheese into plaque. Such an effect had been shown previously when cheese was eaten after a snack intake (when it would be considered to be most protective), but here the effect is also shown when the cheese was present in cooked form as part of a meal (pasta with cheese sauce, or chicken filled with cheese and ham). The uptake of calcium was not however statistically related to the calcium content or concentration in the food — the chicken dish had less calcium in it than a pasta dish with mushroom sauce which did not elevate plaque calcium — suggesting that there is some feature of the calcium in cheese which specifically promotes its uptake into plaque.

It is suggested that in oral health promotion, offering positive advice about protective foods is likely to be better received by those who are most at risk for caries than negative advice to reduce sugar consumption, and this study provides a basis for such positive recommendations. Further clinical studies are required to confirm the data.

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