

DHIM

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(NOTE: These excerpts are from pp. 12-13)

In 1874 the German physician Carl Erhardt of Emmendingen, near Freiburg, gave what was probably the first reference to a prophylactic role for fluoride suggesting that the protective effect of fluoride depended on its ability to make the dental structure harder. He observed hardening in the enamel of a dog fed with potassium fluoride. (Erhardt C. Kali fluoratum für Erhaltung der Zähne. *Memorabilien Monatsheft für rationelle Ärzte* 1874; 19:359-360.) In 1954 the Journal of the American Dental Association commented upon a paper published so 80 years previously thus:

‘Iron has long been used for the blood. Lime and phosphate are given as materials for the bones. Similarly, it has been possible to administer fluorine for the enamel of the teeth in a form soluble through juices, a form in which it can be absorbed. It is fluorine which gives hardness and lasting quality to the enamel of the teeth and so protects them against caries. Several years ago fluorine pastilles were recommended in England, where dental care is known to be on a high level.’ (Friedrich EG. Potassium fluoride as a caries preventive: a report published 80 years ago. *Journal of the American Dental Association* 1954; 49:385.)

In 1896 The German chemist Albert Deninger delivered to the Rhine Society for Natural Science in Mainz a lecture entitled ‘Fluoride: an Agent to Combat Dental Diseases and Perhaps Also Appendicitis’ stating: ‘To nourish the teeth correctly, finely powdered calcium fluoride, fluorspar should be taken. Buy 100g of finely powdered fluorspar (price 10 to 30 pfennigs) in a suitable shop (drug, materials supply stores etc.) and take some, first daily, then after about two weeks only

every two to four days, later on a smaller quantity at even longer intervals.’ Some historians suggest that this was perhaps the first ‘clinical trial’ of fluoride.

In 1902, the Danish pharmaceutical company Cross and Company promoted the sale of Fluoridens, a preparation of fluoride compound (0.12g of calcium fluoride) taken daily, to strengthen the teeth. Their advertising pamphlet, ‘Fluoridens – How to Remedy the Decay of our Teeth’ claimed:

‘The decay of the teeth was mainly due to the refined foodstuffs which do not contain sufficient quantities of fluorine. No dentist is in doubt that the teeth should contain fluorine, and that this element is of great importance to the enamel, which is the shield and protector of the teeth against all pernicious influences.’

During the period 1930-1950 research had shown that fluorides (particularly sodium fluoride and potassium fluoride) was absorbed by tooth enamel and lowered its acid solubility. And in 1939 Cox and his co-workers wrote: ‘Whatever is the mechanism of the relative prevention of dental caries by fluorine, whether the resistance is structural, chemical, organic or combinations of these factors, it seems evident that caries resistance can be built into enamel. (Cox GJ, Matuschak MC, Dixon SF, Dodds ML, Walker WE. Experimental dental caries. IV. Fluorine and its relation to dental caries. *Journal of Dental Research* 1939; 18:481-490.)

Perhaps not surprisingly during the early 1900s, fluoride salts began to be incorporated into toothpastes as indicated by the early patent literature.

... a patent granted to a Roy Cross in 1934 (US Patent 1,943,856) for a 'Dental Preparation' claimed: 'Hardening properties [to the teeth] are given in part by the use of

sodium fluoride. The combination of magnesium oxide and sodium fluoride is particularly valuable in my dental preparation ... Sodium fluoride also prevents decay.'

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