



DET ODONTOLOGISKE FAKULTET

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## Disputas: Tannlege Carl Hjortsjö

ved Institutt for klinisk odontologi vil forsvare sin avhandling for graden ph.d.  
(philosophiae doctor)

*""Studies on the effect of hydrofluoric acid in prevention of early dental erosion""*

### Tid og sted

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### Prøveforelesning

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### Bedømmelseskomité

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### Sammendrag

#### **Studies on the effect of hydrofluoric acid in prevention of early dental erosion**

Dental erosion is a common problem in many countries today. Acidic foods and drinks are major causative erosive agents, and frequent intakes of dietary acids over time can lead to dental erosion. Treatment of teeth with acidic fluorides is shown in vitro to have a protective effect against acid challenges.

The overall aim of the project was to evaluate the enamel erosion-inhibiting potential of dilute hydrofluoric acid solutions (HF) when enamel is exposed to a citric acid challenge. An established experimental in vivo model was used to evaluate three

different acidic fluoride solutions (SnF<sub>2</sub>, TiF<sub>4</sub> and HF). Calcium concentration was measured in citric acid washes that were applied to teeth both before and after the fluoride treatments and compared. Studies were also performed in vitro using the same etching model but with the addition of a profilometry technique to measure loss of surface enamel.

The irritative properties of HF, for potential use in the oral cavity, was tested using Hen's egg test chorioallantoic membrane model (HET CAM) and a newly developed mouse skin test model. These tests concluded that exposure of the soft tissues to concentrations higher than 0.2% HF may be harmful and that the experimental use of dilute HF should be carried out under controlled conditions in order to avoid spillage and exposure of the oral soft tissues.

Comparing the profilometry technique with calcium analysis in vitro showed that under certain conditions there was a large correlation between the two measurement methods. However, profilometry was not sensitive enough to detect any differences when clinical applications were imposed in vitro.

In vivo and in vitro one-minute treatments of sound enamel with dilute solutions of HF or SnF<sub>2</sub> had a protective effect against the citric acid challenge (dental erosion). The erosion-inhibiting effect of HF was present even after seven days.

## Kontaktperson

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