

#2116

Individual Variability of Fluoride Bioavailability in Saliva and Plaque

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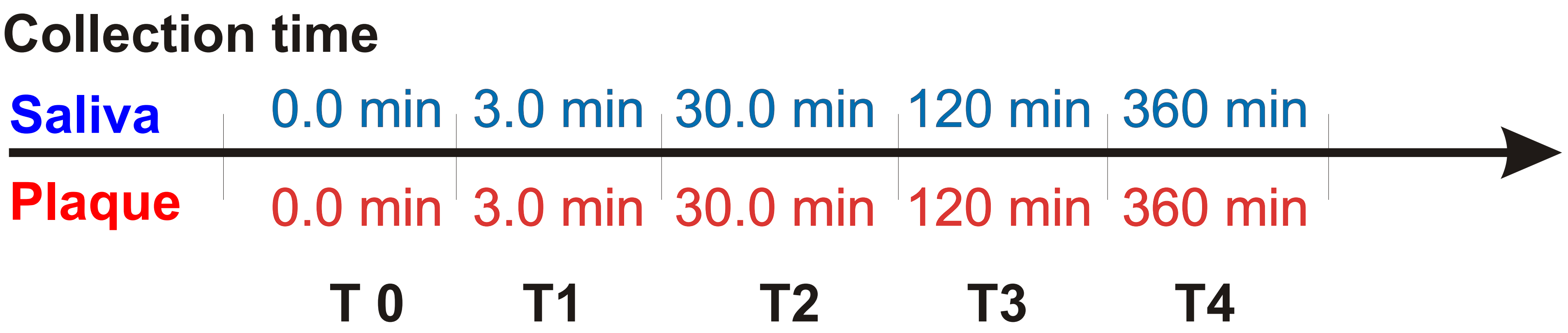


Objectives:

In contrast to traditional drug kinetics, the bioavailability of fluoride at teeth depends on exogenic influences. Therefore, it was the aim of this clinical study to assess the F⁻ content, provided by saliva soluble DENTTABS[®] compared to dentifrice ELMEX[®], in saliva and plaque.

Methods:

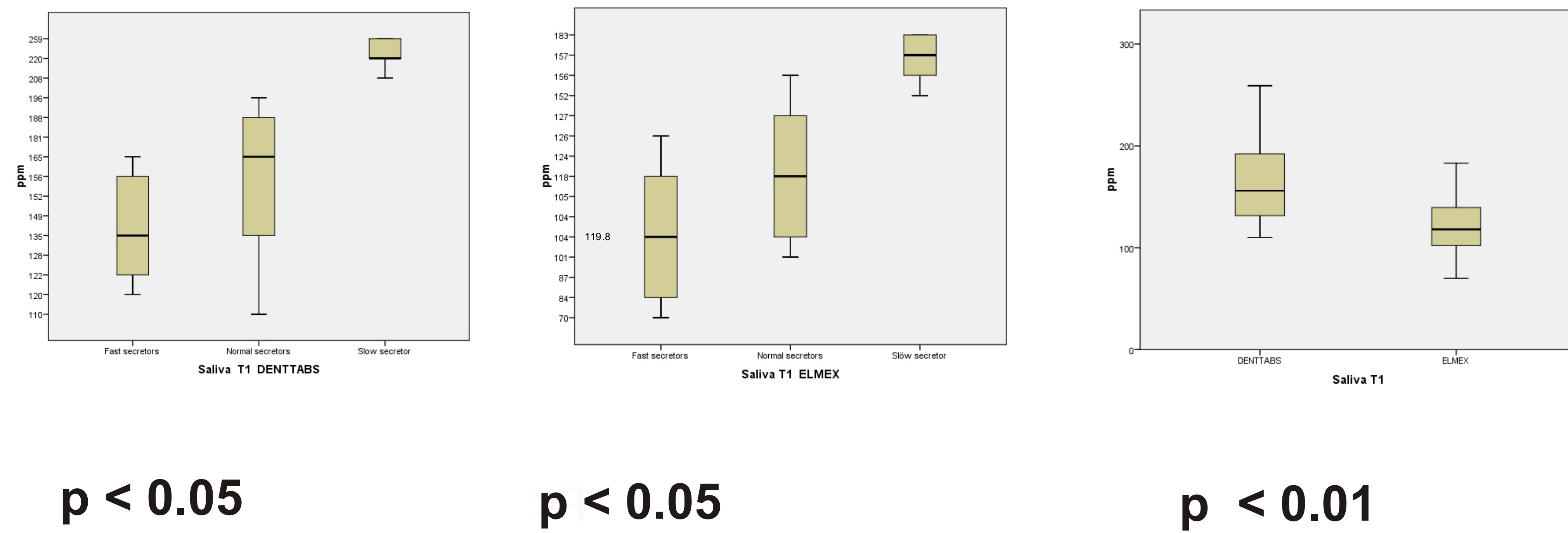
Five trained volunteers brushed their teeth in the morning for 3 min. with one of the products, and saliva and 3-day-plaque-regrowth was collected at 5 time intervals during 6 hours after tooth brushing. The amount of collected saliva, plaque, and water after rinsing was measured, and the F⁻ content was analysed using a fluoride sensitive electrode.



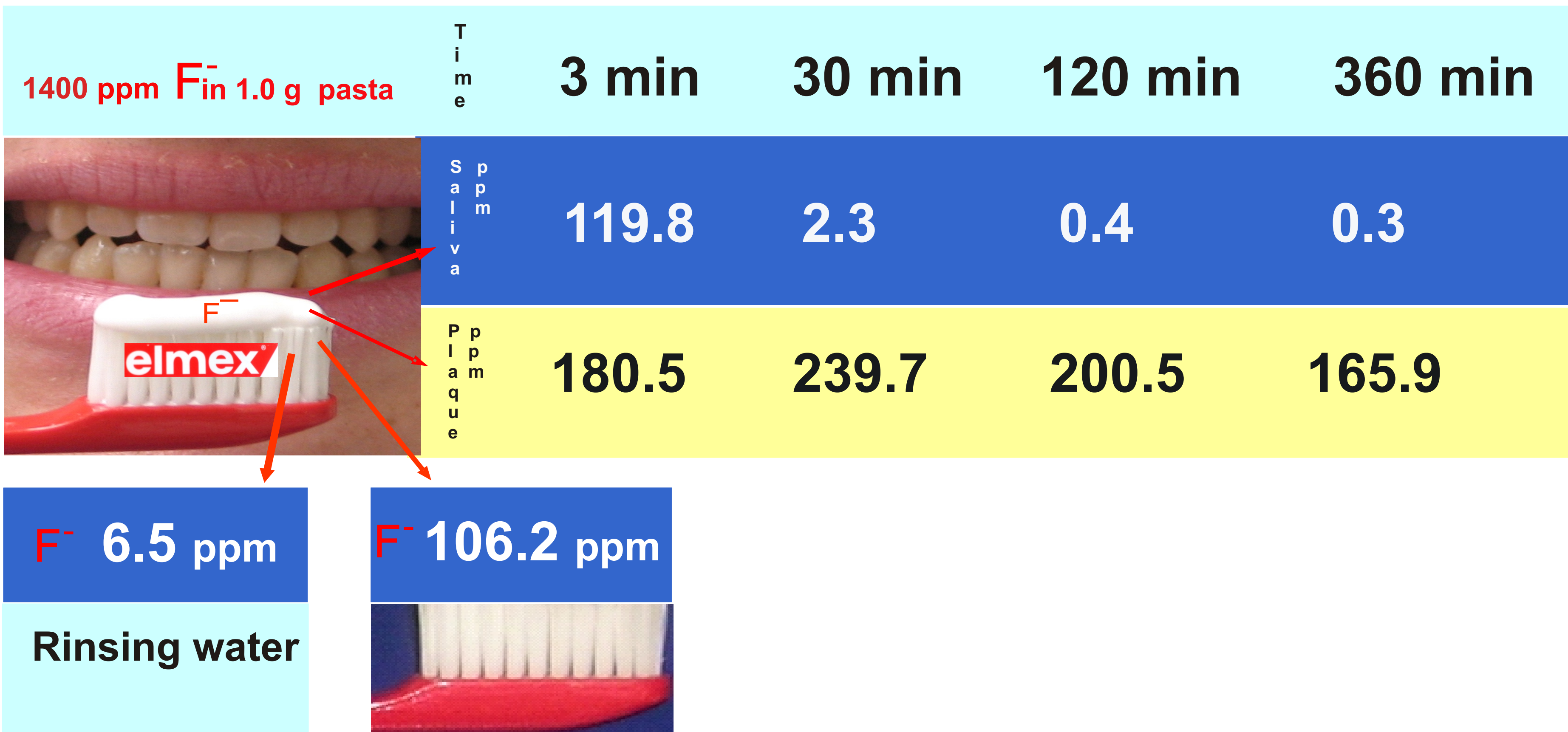
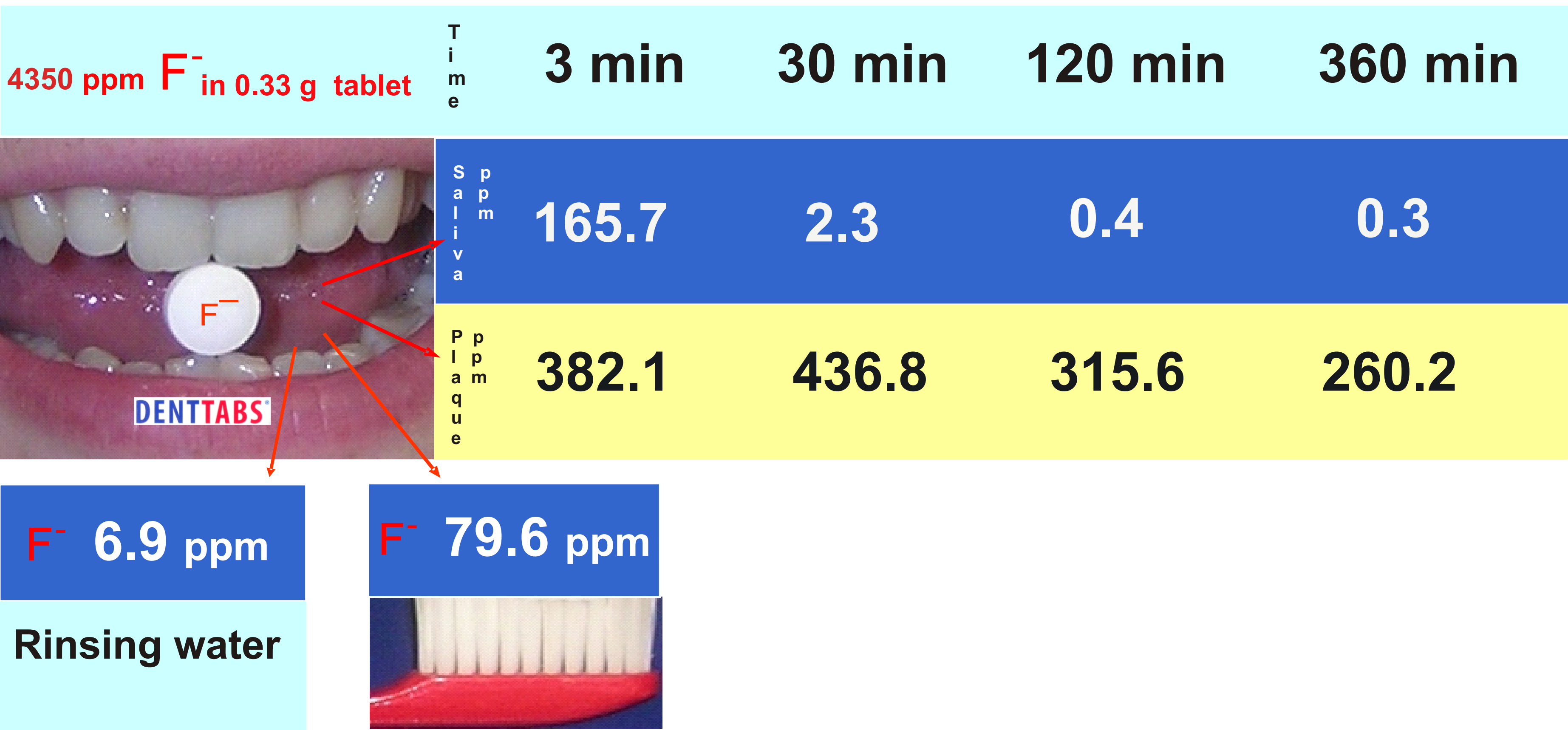
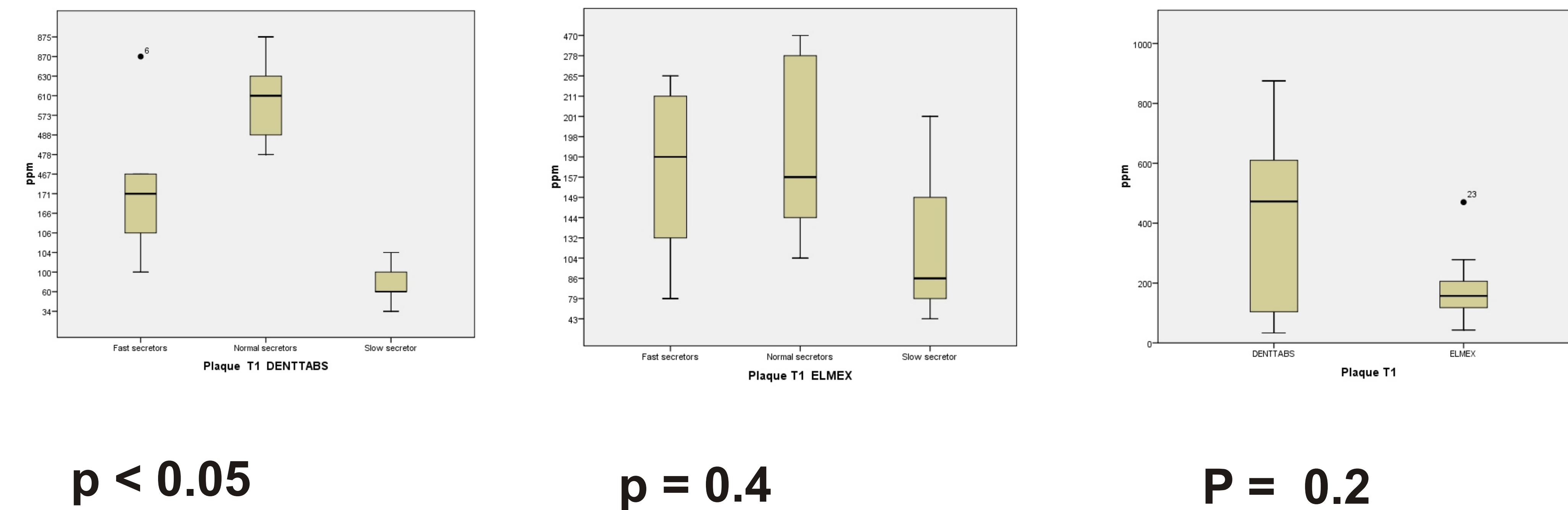
All subjects repeated all study cycles 5 times, and 3 cycles per subject underwent statistical analysis using Mann-Whitney-U test and Spearman correlation

Results:

Immediately after brushing the fluoride concentration in saliva was 165 ppm for DENTTABS[®] (range 110 - 259 ppm) and 120 ppm for ELMEX[®] (range 70-183 ppm).



Immediately after brushing the fluoride concentration in plaque was 382 ppm for DENTTABS[®] (range 60-870 ppm) and 180 ppm for ELMEX[®] (range 43 - 278 ppm), respectively



All plaque F⁻ levels were elevated for 30 min. until 2 hours, decreasing after 6 hours to baseline (260 ppm for DENTTABS[®], 165.9 ppm for ELMEX[®]). According to the highly individual kinetics profile of F⁻ in saliva and plaque, both levels of bioavailability correlate for the first 30 min., and in contrast to plaque levels, the F⁻ content of saliva is mainly back to baseline after 2 hours.

Conclusions:

Fluoride levels in saliva and plaque are interindividually highly variable.

However, the F bioavailability of tooth brushing agent DENTTABS[®], suspended in saliva, was statistically significantly elevated (p= 0.008) compared to ELMEX[®] dentifrice.