

# In vivo evaluation of the safe for teeth properties of NUTRIOSE®FB in healthy volunteers

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## INTRODUCTION

NUTRIOSE®FB is a starch-based food dextrin with a high content of soluble fibres. It may be used in confectionery or in pharmaceutical industry (gums, tablets, candies, etc.). Only a few dextrans and soluble dietary fibres are usable as toothfriendly ingredients in confectionery. Others are fermented by oral bacteria, inducing a pH drop in dental plaque below the critical pH value of 5.7. The aim of this *in vivo* study was to determine the safe for teeth properties of NUTRIOSE®FB in healthy subjects.

## MATERIALS AND METHODS

### Subjects

- ➔ 6 healthy volunteers: 3 men and 3 women with complete medical and dental case histories.
- ➔ All volunteers wore a telemetric mandibular prosthesis equipped with a miniature glass pH electrode located in an interdental area.
- ➔ No oral hygiene during the test period.
- ➔ Age of the dental plaque during the experiments: 4 to 7 days.

### Methodology

The methodology followed (intra-oral wire-telemetry) has been described by Imfeld (1983). The experimental design was as follows:

- ➔ 3 min paraffin chewing,
- ➔ 4 min rest period,
- ➔ 15 min control period (base line),
- ➔ rinse with a 10% solution of NUTRIOSE®FB or sucrose (positive control) for 2 min,
- ➔ 30 min control period,
- ➔ water rinse for 2 min,
- ➔ 4 min rest period between two trials.

## RESULTS AND DISCUSSION

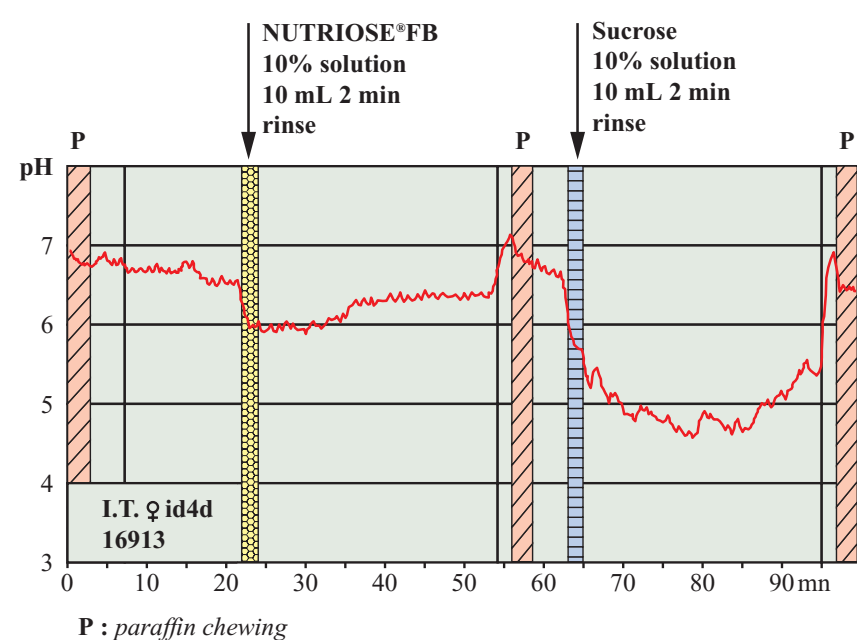
The results are presented in Table I. One representative curve of one volunteer is shown in Fig. 1. pH values obtained after paraffin chewing are in agreement with those habitually recorded in the investigation centre. Results of the positive control (10% sucrose solution) indicated that the plaques were metabolically active and that the experimental conditions were optimal. Individual values clearly demonstrate that the critical pH value of 5.7 was never reached with the NUTRIOSE®FB solution. The number of volunteers (6) allows to calculate the mean pH value for both products which are  $4.49 \pm 0.11$  for sucrose compared with  $5.95 \pm 0.13$  for NUTRIOSE®FB.

**Table I: pH results registered during the test periods**

Subject	1	2	3	4	5	6
Age of the dental plaque	4	5	7	4	5	7
pH at the beginning	6.95	7.00	6.95	7.00	7.00	6.90
pH with NUTRIOSE®FB	5.85	6.10	6.05	6.05	5.85	5.80
pH with sucrose	4.55	4.35	4.65	4.45	4.40	4.55
pH at the end	6.45	6.35	6.75	6.30	6.00	6.15

Results correspond to the lower pH values recorded during the test periods.

**Fig. 1: pH of dental plaque recorded after a rinse with a 10% NUTRIOSE®FB and a 10% sucrose solution**



## CONCLUSION

Results found in this *in vivo* human plaque pH telemetric study clearly demonstrate that **the dietary fibre NUTRIOSE®FB is safe for teeth**. Confectionery and pharmaceutical companies could introduce safe for teeth fibres into their products thanks to the excellent digestive tolerance of NUTRIOSE®FB, thus increasing dietary fibre consumption.