ABSTRACT

Effect of proanthocyanidin isolated and associated with vitamin E or palm oil on enamel subjected to erosion

This *in vitro* study evaluated the effectiveness of proanthocyanidin, palm oil or vitamin E when the enamel was submitted to initial erosion (Article 1) and erosive tooth wear (Article 2). In Article 1, enamel blocks of bovine teeth were divided into 14 groups (n=10): PC – Commercial solution containing SnCl2/NaF/AmF (positive control); NC - Deionized water (negative control); PO- palm oil; P6.5- 6.5% proanthocyanidin, P2- 2% proanthocyanidin; VitE- vitamin E; POP6.5- palm oil + 6.5% proanthocyanidin; P6.5PO - proanthocyanidin 6.5% + palm oil; POP2 - palm oil + 2% proanthocyanidin; P2PO - 2% proanthocyanidin + palm oil; VitEP6.5 - vitamin E + proanthocyanidin 6.5%; P6.5VitE - 6.5% proanthocyanidin + vitamin E; VitEP2 - vitamin E + 2% proanthocyanidin; P2VE- 2% proanthocyanidin + vitamin E. The acquired enamel pellicle (AEP) was performed *in situ* (30 min). The treatment was carried out by applying the solutions (30 seconds) and the AEP aged for 60 min. Then, the blocks underwent demineralization with citric acid (0.5%, pH 2.5) for 30 seconds. The response variable was the percentage of surface hardness loss (%SHL). Data were analyzed by ANOVA and Fisher's test ($p<0.05$). P6.5VitE was the only group that provided protection similar to the positive control (PC). PO, P2, POP6.5, P2PO, P6.5VitE and P2VitE exhibited %SHL similar to the PC and NC groups. P6.5, VitE, P6.5PO, POP2, VitEP6.5 and VitEP2 were different from PC and similar to NC. In article 2, bovine enamel blocks (n=84) were distributed among the following treatment groups: PC; NC; PO; P2; VitE; P2PO; P2VitE. Half of sample of enamel blocks in each group were subjected to erosion and the other half to erosion + abrasion. The AEP was preformed *in situ* (30 minutes). Subsequently, the specimens were treated in vitro with solutions (30s). Then, the blocks were left in the oral cavity for more 60 min to obtain the modified PAE. The samples were subjected to an erosion cycling model associated with abrasion for five consecutive days. Demineralizations were conducted by immersing the samples in 0.5% citric acid for 90s (pH=2.5), 4x/day. The treatment was administered before the first and third erosive challenges, and following these challenges, abrasive cycles (15s) were performed on half of the samples. Enamel wear was quantified profilometrically and data were analyzed by two-way ANOVA and