

OP37 *IN VITRO* EVALUATION OF THEOBROMINE, ENAMEL MATRIX PROTEIN DERIVATIVES, CASEIN PHOSPHOPEPTIDE AMORPHOUS CALCIUM PHOSPHATE AND SEA SALT ON ENAMEL REMINERALIZATION NEXT TO ORTHODONTIC BRACKETS

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AIM: To evaluate and compare the remineralization potential of theobromine, enamel matrix derivatives (Emdogain), casein phosphopeptide amorphous calcium phosphate (CPP-ACP), fluoride (NaF) and sea salt under similar *in vitro* conditions to prevent incipient caries lesions under and next to orthodontic brackets.

MATERIALS AND METHOD: Ninety extracted human premolars were randomly allocated to six groups [n = 15; control (C), theobromine (T), Emdogain (E), CPP-ACP (C), fluoride (F), and sea salt (D)]. All brackets were bonded with Transbond XT and the teeth were coated with nail varnish, only leaving a window on the occlusal and cervical enamel around the brackets. All groups were subjected to a pH cycle for 30 days and each day the tested materials were applied for 3 minutes to specific samples. The extent of remineralization in each group was assessed using energy dispersive X-ray spectroscopy (EDX) working with scanning electron microscopy and calcium (atomic %Ca), phosphor (atomic %P) contents and %Ca/P ratios were calculated.

RESULTS: In all regions, except the middle region under the brackets, %Ca values and %Ca/P ratios in T, E, C, F and D groups were found significantly higher compared to the C group ($P < 0.001$). The remineralization potential of all tested materials showed no statistically significant differences after pH cycles ($P > 0.05$).

CONCLUSIONS: The applied remineralization materials in all test groups showed a positive effect. New remineralization materials such as theobromine, enamel matrix derivatives and NaF could be used during fixed orthodontic treatment to prevent white spot formation as an alternative therapy to provide remineralization.