

## **IMPORTANCE OF EFFECTIVE SANITIZATION OF ORTHODONTIC APPLIANCES: AN *IN VITRO* STUDY**

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The most common oral fungal infection diagnosed in humans is candidiasis. Candida associated denture stomatitis is the most prevalent form of oral candidosis in Western Europe and the USA and may affect 50% of persons wearing complete dentures. The disease is more common in elderly patients, but can occur in orthodontic treated patients. Especially patients wearing full time removable appliances such as Twin block functional appliances are vulnerable. Without proper treatment, appliance associated stomatitis causes local discomfort including mouth burning, sores and generalised mouth pain but also can lead to systemic infection of lungs, kidneys, & oesophageous. The removable appliance is considered a prime etiological factor and especially *Candida albicans* can initiate, maintain and exacerbate the disease. Several studies demonstrate the adherence of *Candida albicans* to denture acrylic surface as well as *Candida* infiltration in the pores of the resin. Appropriate oral hygiene is critical in the prevention and treatment of denture stomatitis especially since the removable appliance itself may serve as an important source of reinfection. The orthodontist should therefore play a crucial role in the education of the appliance wearer to promote efficient oral hygiene practices which includes daily brushing of the palatal oral mucosa, brushing of the appliance combined with proper disinfection using sanitizing tablets. Unfortunately, most commonly used effervescent tablets only clean dentures or appliances without consistently reducing the number of micro-organisms, especially fungi. A recently published *in vitro* study using an effervescent product called Medical-Interporous<sup>TM</sup> (MST-Laboratories AG, Liechtenstein) indicates the effective and complete elimination of disease producing germs from contaminated dentures, such as *Candida albicans* but also bacteria such as *Staphylococcus aureus* and *Pseudomonas aeruginosa*, and herpes simplex 1. Here we report on another *in vitro* study aimed to evaluate the sanitizing efficacy.

### Aim:

*In vitro* evaluation of the sanitizing efficacy of Medical Junior<sup>TM</sup> against *Candida albicans*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Streptococcus mutans* and *Streptococcus pyogenes*.

### Material and methods:

The micro-organisms were incubated at 37° C. in the presence or absence of the tablets and analysed for survival after 8 minutes, 15 minutes, 1h, 5h and 12 hours by colony counts.

### Results:

Absolutely no growth of any micro-organisms could be observed already after 8 minutes of incubation in the presence of the sanitizing tablets, as compared to negative (uncontaminated) and positive controls.

### Conclusion:

Under the experimental *in vitro* conditions, Medical Junior<sup>TM</sup> is highly effective against *Candida albicans*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Streptococcus mutans* and *Streptococcus pyogenes* already at 8 minutes of contact. These data confirm the study previously published by Glass et al, where contaminated fragments of methylacrylate dentures incubated with target organisms including *Staphylococcus aureus*, *Pseudomonas aeruginosa*, herpes simplex 1, and *Candida albicans* were also completely eliminated by a single use of tablets. Currently ongoing clinical trials will provide further evidence of the efficacy of tablets for the sanitization and its subsequent beneficial effects in the prevention and treatment of denture stomatitis.