

**Cytotoxicity and estrogenicity of Invisalign appliances.**

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**INTRODUCTION:** Our purpose was to study the in-vitro cytotoxic and estrogenic properties of Invisalign appliances (Align Technology, Santa Clara, Calif). **METHODS:** Three sets, each consisting of a maxillary and a mandibular appliance, of as-received aligners were immersed in normal saline solution for 2 months. Samples of eluents were diluted to 3 concentrations (5%, 10%, and 20% vol/vol) and tested for cytotoxicity on human gingival fibroblasts and estrogenicity by measuring their effect on the proliferation of the estrogen-responsive MCF-7 breast cancer cells. All assays were repeated 4 times for each maxillary and mandibular set, and the results were analyzed with 2-way analysis of variance (ANOVA) with appliance and concentration serving as predictors at the .05 level of significance; differences among groups were investigated with the Tukey test. **RESULTS:** There was no evidence of cytotoxicity on human gingival fibroblasts and no stimulation of proliferation of the MCF-7 cell line at any concentration, indicating no estrogenicity of aligner eluents. **CONCLUSIONS:** The use of Invisalign appliances did not seem to induce estrogenic effects under the conditions of this experiment.