Inflammation was regulated by polyacrylic resins in human gingival fibroblasts

Temporary fixed prostheses are an important adjunct because they protect prepared teeth and prevent exposure of dental tissues. The most commonly used temporary restorative materials in prosthodontics are PMMA, MMA, and the more modern bis-acryl composites. The main techniques for temporary restorations use custom-made and preformed materials. Both are adapted to dental tissues by means of direct clinical, indirect laboratory, and/or combined direct/indirect techniques.

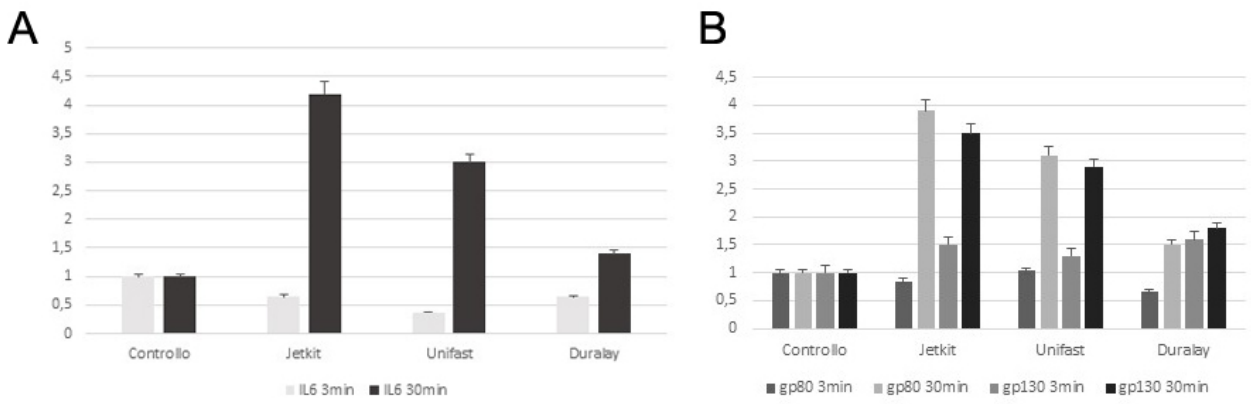

Fig. 1. A. qRT-PCR for IL-6 gene (3 min vs. 30 min). B. qRT-PCR for gp80 and gp130 genes (3 min vs. 30 min).

In direct clinical technique, acrylic resins are in close contact with soft tissue during the polymerization phase (3-5 min), and complete polymerization requires 24-72h. In this report, we studied the effects of three commercial polyacrylic resins (Jet Kit, Unifast, and Duralay) on transcriptional control of gene expressions of human IL-6 and its receptors gp80 and gp130 in HGFs. As compared with HGFs processed with resins polymerized for 3 min, gene expression was increased in HGFs treated when these materials were polymerized for 30 min. Moreover, Jet Kit and Unifast had the greatest ability to upregulate IL-6, gp80, and gp130 gene expression. In contrast, Duralay had no effect on transcriptional control of IL-6 or its receptors. Polyacrylic resins induce an inflammatory mechanism in HGFs, and this process is mediated by IL-6 through the gp80 and gp10 receptors. We demonstrated that upregulation of the IL-6, gp80, and gp130 genes in HGFs differs, perhaps because of variation in the characteristics of the acid resins, namely, the amount of the materials released, the composition of the materials, and polymerization time. All these factors have crucial roles in the control of DNA transcription.

In conclusion, the present findings suggest we cannot exclude the involvement of these signals in the activation of inflammatory processes in the human gingival. The present data should be

regarded as preliminary and will require further study and experiments, which are currently underway. Specifically, our target is to identify the role of polyacrylic acid resins in the control of acute-phase response.

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