The aim of the present work was to investigate the biocompatibility in vitro of biomedical biomaterials employed in stomathology, in order to assess useful biological parameters, i.e. the correlation between cell proliferation rates and the expression of various antigens of the extracellular matrix (ECM), as well as to obtain useful information for the subsequent "in vivo" investigations.. Since in the study of biocompatibility of dental implants many reports have been performed regarding the aspects of osteointegration processes, few studies have examined the relationships between soft tissues and biomaterials [2]. In particular, we would study the relationship between cell proliferation rates of cultured fibroblasts to the immucytochemical expression of molecules involved in cell adhesion mechanisms to ECM, i.e. fibronectin, chondroitin sulfate and $alpha_5$ $beta_1$ integrin. We observed that cell proliferation was related in particular to the expression degree of fibronectin. As far as the different dental implant surfaces were concerned, we found that fibronectin exhibited a greater immunocytochemical expression in fibroblasts cultures in the presence of smooth surfaces correlated with higher fibroblast proliferation rates, suggesting that smooth surfaces could allow a better adhesion of cells of the soft oral tissues, i.e. gingival connective tissue. We think these results could be interesting, since the integration of implant dental materials requires not only the best osteointegration, but also an optimal adhesion of gingival soft tissues to the apical part of the same dental implant. These findings could also suggest that dental implant surfaces should be manufactured to obtain the best osteointegration in its deeper part, whereas the best fibroblast adhesion in its apical portion.

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References

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Keywords

Biocompatibility; implant biomaterials; cell proliferation; ECM antigens.