

Response to HGE-15 Cells established from Human Gingiva to Titanium

Hitoshi Oguchi *, Yasuyo Karube, Kameji Matsumoto,
Mitsuhiko Morito

(Tsurumi University School of Dental Medicine)

Purpose: One important problem critical to the outcome of implant therapy is adhesion between implant and the gingiva. In 1991, Ishikawa established a cell line from human gingiva and named it HGE-15. The purpose of this study is to investigate the response to titanium using HGE-15 cells.

Materials and Methods: Commercial titanium alloy (CT), mirror polished titanium alloy (MRT), and Plastic culture dish (F) as control were used in this experimental. 1.0×10^5 of cells were plated on the materials and cultured for 30 minutes, 2 hours and 24 hours for examine with SEM. For examination by TEM, cells were cultured for 24 hours and 1 week.

Results: After 30 minutes, the most cell adhesion and form changes were seen on MRT. After 2 hours, the cells were also recognized on F and MRT, and its rate were more than CT. After

24 hours, the surface of the sample was covered with the polygonal cells. No hemidesmosome was seen between the materials and cells 24 hours after the incubation on F, MRT, and CT. But 1 week after, the amorphous density layer was observed between cells and CT. On MRT was shown only on the cellular side.

Conclusion: Our results indicate that HGE-15 cells have the highest affinity for MRT. Especially, TEM findings after 1 week showed strong adherence between MRT and the cells. We conclude that the extracellular matrix adhered to the material side. Our results may have important implications for the surface structure of titanium.