



**IMPLANTATPRAXIS**  
 & ÄSTHETISCHE ZAHNHEILKUNDE

## PUBLIKATIONEN

**»Bone engineering - vitalisation of alloplastic and allogenic bone grafts by human osteoblast-like cells.«, Hinze M., Wiedmann-Al-Ahmad M., Glaum R., Gutwald R., Schmelzeisen R., Sauerbier S. Br J Oral Maxillofac Surg. 2009; 48(5): 369-373.**

### ABSTRACT

Human osteoblasts on non-sintered hydroxyapatite and demineralised bone matrix (DBX) were analysed in vitro to find out whether they would be suitable for reconstruction of bones in oral surgery. Human osteoblasts were isolated from the jaw during routine dental operations and seeded onto the two biomaterials. Cells were characterised by assay of alkaline phosphatase, detection of type 1 collagen, and production of osteocalcin. After 21 days of cultivation, the cell/biomaterial constructs were examined by scanning electron microscopy, thin sections, and propidium iodide/fluorescein diacetate staining. The osteoblasts formed a vital multiple cell layer on DBX within 3 weeks of cultivation. On hydroxyapatite, the cells showed no tendency to proliferate or migrate onto the synthetic biomaterial, or to form well-spread and viable cell constructs. These findings suggest that surface morphology or the presence of osteoinductive factors may have an important role in the adhesion and proliferation of osteoblasts. Human DBX can be colonised by human osteoblast-like cells in vitro, indicating the potential of allogeneic carriers for future procedures in bone engineering.

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