

## Effects of Extracts of Bioactive Glasses on the Viability, Migration, and ALP Activity of Osteoblast-Like Cells

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### Abstract

Bone defects caused by infection, tumor, trauma, surgery, and congenital malformation are common, but the repair of large bone defects is still a challenge in orthopedic and craniomaxillofacial surgery. The current gold standard for bone repair, autologous bone grafting, is limited by limited bone supply, pain at the donor site, higher risk of infection, and longer operation time. Thus, various bone graft substitutes were developed in the past decades. Among them, bioactive glasses have drawn much attention because of their good biocompatibility, high osteoconductivity, and excellent osseointegration ability. To elucidate the mechanism of their beneficial effects on bone regeneration, we tested the extracts of bioactive glasses on the viability, migration, and ALP activity in hFOB 1.19 cells. In general, extracts of bioactive glasses at 0.05 g/ml had no effects on the viability, migration, and ALP activity; Extracts of bioactive glasses at 0.1 g/ml slightly inhibited the cell proliferation but increased the ALP activity; Extracts of bioactive glasses at 0.2 g/ml decreased the viability, migration, and ALP activity of cells. Our results indicated that the dissolution products of bioactive glasses contained both beneficial and harmful components for the osteogenic differentiation of hFOB 1.19 cells, and the dose of bioactive glasses must be carefully considered when they are used in the clinic.

### Biography

Yu Li got his master degree from Shanghai Jiaotong University in 2017. He is a doctoral student at Heidelberg University now. He has published 5 papers as first author and 3 papers as co-author in reputed journals.

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