

## Abstrak

Tindakan operasi di bidang Bedah Mulut dan Maksilofasial yang menyebabkan defek pada tulang membutuhkan suatu tindakan rekonstruksi dengan cara tandur tulang. Bahan tandur tulang yang dipakai dapat diambil dari tulang sapi (*bovine bone*) sebab memiliki komponen mirip dengan tulang manusia. Tulang sapi yang diproses dengan cara *freeze drying* (FDBB) diharapkan dapat menjadi *bone graft substitute*. Tandur tulang yang diproses dengan cara ini masih menyisakan komponen organik sehingga diharapkan mampu menginduksi proliferasi dan differensiasi *mesenchymal stem cell* menjadi osteoblast. Dilakukan penelitian uji toksisitas secara *in vitro* FDBB terhadap *human bone marrow derived mesenchymal stem cell* (hBM MSC). Diteliti pula apakah lama perendaman FDBB dalam *conditioned medium* dapat mempengaruhi proliferasi hBM MSC.

Konsentrasi FDBB yang semakin tinggi akan bersifat semakin toksik terhadap hBM MSC. Lama perendaman FDBB *conditioned medium* tidak mempengaruhi viabilitas hBM MSC.

Kata kunci : *Freeze dried bovine bone* (FDBB), *human bone marrow derived mesenchymal stem cell* (hBM MSC), *FDBB conditioned medium*, viabilitas

**Abstract**

An operation in Oral and Maxillofacial Surgery which causes a defect in bone, requires a reconstruction using bone graft. This bone graft can be taken from bovine bone because it has similar components to human bone. Bovine bone processed by means of freeze drying (FDBB) is expected to be a bone graft substitute. Bone grafts processed in this way still leave organic components that are expected to induce the proliferation and differentiation of mesenchymal stem cells into osteoblasts. This research conducted *in vitro* toxicity tests of FDBB applied in *human bone marrow derived mesenchymal stem cell* (HBMMSC). Also investigated whether long immersion in the conditioned medium FDBB can affect proliferation HBMMSC.

FDBB that has higher concentration will be more toxic to HBMMSC. FDBB soaking time *conditioned medium* did not affect the viability of HBMMSC.

**Keywords:** *Freeze dried bovine bone* (FDBB), *human bone marrow derived mesenchymal stem cell* (HBMMSC), *FDBB conditioned medium*, viability

## Daftar Singkatan

BMP	= <i>Bone Morphogenic Protein</i>
D-MEM	= <i>Dubelco Modified Eagle Medium</i>
DMSO	= <i>Dimethyl Sulfoxide</i>
EDTA	= <i>Etylen Diamin Tetra Acetic Acid</i>
FBS	= <i>Fetal Bovine Serum</i>
FDBB	= <i>Freeze Dried Bovine Bone</i>
HBMMSC	= <i>Human Bone Marrow derived Mesenchymal Stem Cell</i>
ITD	= <i>Institute of Tropical Disease</i>
MSC	= <i>Mesenchymal Stem Cell</i>
MTT	= <i>Methyl Thiazol Tetrazolium</i>
OD	= <i>Optical Density</i>
ROS	= <i>Reactive Oxygen Species</i>
RSUD	= <i>Rumah Sakit Umum Daerah</i>
$\alpha$ -MEM	= <i>Alfa Modified Eagle Medium</i>