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THE EFFECT OF DIFFERENT STERILIZATION PROCESSING METHODS ON MECHANICAL PROPERTIES AND CELL VIABILITY OF HUMAN BONE ALLOGRAFT

Rizki Rahmadian, Menkher Manjas*

M Djamil Hospital Tissue Bank/ Medical Faculty Andalas University Padang West Sumatera 25171 Indonesia

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*Corresponding author:

Menkher Manjas

Email:

rizki_md@yahoo.com

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SUMMARY

The use of bone allograft bone is increasingly common in orthopedic reconstruction surgery. The different method of preparation of bone allograft is subject of great debate. Use of sterilization methods applied to human bone is likely to affect both the mechanical and biological properties of human bone allograft. The mechanical properties of the transplanted bone inevitably determine the short-term and mid-term results of the orthopedic procedure performed. Several studies have been proved that fresh- frozen graft improved biological and biomechanical characteristics relative to irradiated material, whereas the possibility of bacterial or viral transmission is considered less on irradiated graft. There are several techniques that used in bone allograft processing such as pasteurization, irradiation, ethylene oxide gas, high hydrostatic pressure, and others, with their respective advantages and disadvantages. And it is very important we note that each technique also has many variations in the way processing and dose that will definitely affect bone strength and cells viability, which will greatly affect the outcome of the operation. Careful literature review is needed to determine the effect of various processing techniques on bone quality.