

Evaluation of the viability of periodontal ligament cell in rat teeth using various freezing methods

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I. Object

The purpose of this study is to evaluate the viability of periodontal ligament cell in rat teeth using various freezing methods through MTT assay and TUNEL test.

II. Materials & Methods

12 teeth per group of Sprague-Dawley white female rats of 4 week-old were used in MTT assay, 6 teeth in TUNEL test. The Maxillary left and right, first and second molars were extracted as atraumatically as possible under tiletamine anesthesia. The experimental groups were group 1 (immediately extracted), group 2 (cold preservation at 4 °C for 1week), group 3(rapid cryopreservation in liquid nitrogen), group 4 (programming freezing under magnetic field), group 5 (programing freezing.)

It was used F medium as preservation media and 10% DMSO as cryoprotectant. After preservation and thawing, the MTT assay and TUNEL test were processed. One way ANOVA and Scheffe method were performed at the 95 % level of confidence. The value of optical density obtained after MTT analysis was divided by the value of eosin staining for tissue volume standardization.

III. Results

In both MTT assay and TUNEL test, group 1, 3 had showed higher viability of periodontal ligament cell than group 3,4,5 and group 3,4,5 had showed higher viability than group 2.

IV. Conclusion

From the result of this study, various freezing methods except cold preservation showed high viability of periodontal ligament cell.