VIABILITY OF CHONDROCYTES EMBEDDED IN AGAROSE GEL

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Introduction: Arthritis affects a large portion of our population resulting in a significant expense with limited solutions and current treatment has limited options. The current research examines the viability of chondrocytes embedded in an agarose gel using a standard method of viability assessment.

Methods: Two groups were created with frozen canine chondrocytes. Group 1 consisted of non-embedded chondrocytes in tissue culture media (n=7). Group 2 consisted of embedded chondrocytes in agarose gel (n=9). Culture medial was collected from the samples for glycosaminoglycan (GAG) content analysis to determine viability of cells. Culture media was collected from Group 1 at days 0, 4, 7, and 10 and from Group 2 at days 0, 3, 5, and 7 for further analysis with GAG assay. GAG content was plotted and compared between groups. Statistical significance was defined as $p<0.05$.

Results: The average GAG content of Group 1 increased from 15.55 μg/μL at day 4, to 27.46 μg/μL at day 7, and 163.07 μg/μL at day 10 showing a continuous increases of GAG in group 1. The average GAG content of Group 2 was 32.03 μg/μL at day 0, 57.23 μg/μL at day 3, 47.92 μg/μL at day 5, and 53.21 μg/μL at day 10. There were no statistically significant differences between collection days in Group 2 ($p=0.921$).

Conclusion: Based on this information in this study, Group 1 non-embedded chondrocytes show viability whereas Group 2 results show that embedded chondrocytes are not a reliable source to grow viable chondrocytes. This study provides information as to the effectiveness of agarose gel as a potential matrix for chondrocytes in bio-engineered tissue.