

A Review on Radiation Effects towards Cell Culture

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ABSTRACT

Effects of radiation on tissues and organs are well documented. However recently, radiation was used as an evaluation tool to assess newly formed engineered tissue reconstruction and regeneration. This raises questions on the positive application of radiation, amidst the usual discussions pertaining to the risks of radiation. Furthermore, the effects of radiation have yet to be established in primary cell culture. The objective of this review is to identify and evaluate previous works that examined the possible effects of radiation on cells. Emphasis is placed upon the effects of radiation on primary cell cultures in tissue engineering (TE). The SCOPUS databases were searched for articles published from 2001 to 2016. "Radiation" and "cell culture" were used as search terms either in the title, abstract or keywords of the articles. Thematic analysis was performed on the 5031 retrieved articles. Filtering for "radiation effects" in the title, 4139 articles were identified. Within these results the key search term was further narrowed down to "tissue engineering area". 1164 articles were identified which were then subjected to key search term within "primary cell culture". A total of 334 articles were abridged that were subjected to further thematic classifications. Within these classifications, 291 articles were summarized to fulfil the objectives of the review. The results show a certain trend towards the incompatible effect of radiation on primary cell culture. Work is in progress in filtering the keywords further to narrow the scope to radiation effects on chondrocytes in the title, abstract or keywords of the articles. This review will present the possible effects of radiation on primary cell culture. It is hoped that this review will be able to outline the current knowledge on the effects of radiation on primary cell cultures and to improve the understanding of those effects on cells in general.

KEYWORDS: Radiation, Primary Cell Culture, Growth, Radiation Effects, Review

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