

BioNanoScience 2016 vol.6 N4, pages 460-463

Induction of Apoptosis of Tumor Cells by Oligochitosans (Short Chain Chitosans)

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Abstract

© 2016, Springer Science+Business Media New York. An induction of apoptosis by short chain chitosans in human lung carcinoma A549 cells and cow embryonic lung cells was studied. Seventeen well-defined oligochitosans with wide range of molecular weights, from 5.5 to 46.7 kDa, were used in this study. The experiments showed that three oligochitosans with molecular weight 6.1, 7.7, and 9.0 kDa notably induced the high level of apoptosis of human lung carcinoma A549 cells. It presented a dose-dependent manner, and the apoptotic rate amounted to about 29–50 % after treatment with 200 µg/ml oligochitosans for 24 h for A549 cells and 7–17 % for LEC cells in the same conditions. The results obtained show that the oligochitosans are more active in inducing apoptosis and in decreasing viability in A549 cells than LEC, which suggests that it could be a potential chemotherapeutic drug.

<http://dx.doi.org/10.1007/s12668-016-0243-8>

Keywords

A549 cells, Antitumor, Apoptosis, Chitosan, LEC cells, Oligochitosan