Science News

New Therapy Found for Lung and Skin Cancer, Based on Suicide Gene E

ScienceDaily (Sep. 21, 2010) — Scientists at the University of Granada have developed a new therapy for the treatment of skin and lung cancer. This therapy involves the use of a suicide coliphage-gene (gene E) that can induce death to cells transfected with it.. Their studies have demonstrated that this technique is not only effective in vitro (using tumour cell cultures), but also in vivo through the use of experimental animals in which tumours were induced.

See Also:

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Reference
- Tumor suppressor gene
- Huntington's disease
- Metastasis
- Tumor

Although further research is required, the results obtained at the University of Granada revealed gene E's intensive antitumour activity, which means that it could be used in new treatments for this type of pathology.

This study was carried out by Raúl Ortiz Quesada, from the Department of Human Anatomy and Embriology, at the University of Granada, and led by professors Antonia Aránega Jiménez, José Carlos Prados Salazar y Consolación Melguizo Alonso.

In this study developed at the University of Granada, gene E and gene gef -which are bacterial lysis genes- were employed. This is the first time that this type of genes is used in eukaryotic cells in the treatment of tumours. During the in vitro tests, the researchers studied the effect of these genes on the B16-F10 melanoma line. This line was then used to generate tumours in vivo and analyse their effect.

Experimental Approach

This is an experimental technique that could be used in clinical tests in the future. This new therapy was also tested on the lung adenocarcinoma A549 line. Then, they studied how these genes affect cell proliferation -both in vitro and in vivo experiments- and their mechanism of action. To such purpose, they studied the alterations that such genes render on outer mitochondrial membranes, and carried out cell-death tests and cell and tissue morphology analysis through microscopy techniques.

Tumour growth inhibition in cultured cells of gene E and gef within 72 hours was 72% and 35% respectively, in comparison to in vivo experiments. Gen E action on melanoma tumours induced in mice was 70-80% of tumour regression within 8 days of treatment.

Raúl Ortiz Quesada stated that in a near future, when genetic therapies allow to improve the controlled expression of these genes in tumour cells, and reduce the risks involved in their clinical use, *"they could be* employed as an efficient tool in the treatment of these pathologies."

The researcher points that they have already noticed the significant antitumour effects of gen E when employed separately. He also thinks that when this gene is combined with chemotherapy *"it can reduce the effects of chemotherapy agents, which would allow the reduction of the dose required, as well as the reduction of side effects of chemotherapy."*

The results of this research were published in the *Journal of Molecular Medicine* and the journal *Experimental Dermatology.*

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