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o licenza /
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or license

VACCINES BASED ON GENETIC CHIMERA OF VIRAL AND/OR TUMORAL ANTIGENS AND PLANT PROTEINS

European patent application No. 10747517.0

Settori di applicazione industriale / Fields of use

Industrie farmaceutiche attive nel campo della ricerca e sviluppo di vaccini ricombinanti e di immunoterapici in genere /
Pharmaceutical companies active in the field of research and development of recombinant vaccines and immunotherapeutic molecules in general.

CONTATTI

SETTORE TRASFERIMENTO TECNOLOGICO E SPIN-OFF

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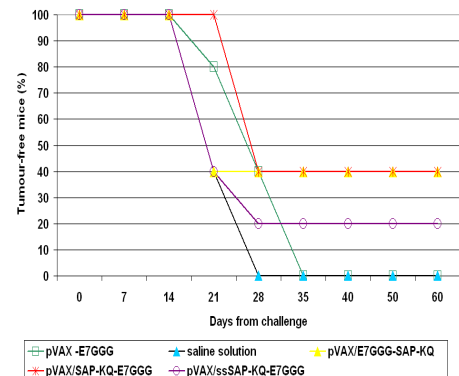
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Riferimenti Bibliografici / Bibliographic references

Massa S., Paolini F., Spanò L., Franconi R., Venuti A. "Mutants of Plant Genes for Developing Cancer Vaccines", *Human Vaccines*, vol. 7(1s): published on-line January/February 2011

Mouse protection against TC-1*-induced tumor after therapeutic vaccination. Data are represented as percentage of tumor-free mice. Results are from one representative out of the three performed experiments.



DESCRIZIONE / DESCRIPTION

Preventive Human Papillomavirus (HPV) vaccination is expensive and it may be an insufficient tool to tackle cervical cancer worldwide. Therapeutic intervention is seeking for safe/effective vaccines inducing the activation of CD8⁺ cytotoxic T lymphocytes (CTLs) that is required to clear the tumor. Linking a tumor-specific antigen (i.e. the E7 onco-protein of the 'high risk' HPVs) to molecules able to increase its immune 'visibility' is a strategy to force the immune system to fight cancer. We focused on plants as sources of innovative immuno-stimulatory sequences to be used as carriers. The 'Ribosome inactivating proteins' (RIPs) have been so far used to develop immunotoxins for targeted cancer therapy. Beside toxicity, RIPs have other features (i.e. antigenicity, ability to modulate immune functions, apoptosis induction) that could be useful tools to use in tumor immunotherapy. Saporin is a single chain (type I) RIP produced in various organs of *Saponaria officinalis* (soapwort). A non toxic mutant of saporin (SAP-KQ) was used as a carrier for the E7GGG gene (mutagenized from the high risk HPV type 16 E7 gene) in the context of a DNA-based vaccine. We demonstrated that fusion constructs of SAP-KQ with E7GGG can induce E7-specific Immunoglobulins, CTLs and Delayed-Type Hypersensitivity affecting the growth of E7-expressing tumors in mice. These data give a clue that mutant plant genes hold promise to improve the poor immunogenicity of tumor-associated cancer antigens and could contribute to the evolution of new cancer immunotherapy.