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NON-TOXIC MUTANT FORM OF SAPORIN FOR DEVELOPING CANCER VACCINES

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Ribosome Inactivating Proteins, Saporin, HPV vaccination, E7 protein

Saporin is a type 1 (single chain) ribosome-inactivating protein (RIP) present in different organs of the soapwort (*Saponaria officinalis* L., Caryophyllaceae). RIPs are potent inhibitors of protein synthesis, enzymatically removing a specific adenine residue present in a conserved stem and loop region of the 23S/25S/28S rRNA (ricin-sarcin loop).

Although saporin cytotoxicity, due to protein synthesis arrest, was the first feature to be characterized and clinically exploited, other biological activities exist (i.e. immunogenicity, ability to modulate immune functions and apoptosis induction) that could be useful tools in tumour immunotherapy.

We have investigated the potential of saporin as an innovative immuno-stimulatory carrier, able to increase immune 'visibility' of a weak antigens. A non toxic mutant form of saporin (SAP-KQ) was used as a carrier for the E7GGG gene, an attenuated form of the high risk HPV type 16 (Human Papilloma Virus) gene coding for E7 oncoprotein.

We show that fusion constructs of SAP-KQ with E7GGG can induce E7-specific Immunoglobulins (IgGs), Cytotoxic T Linphocytes (CTLs) and Delayed-Type Hypersensitivity (DTH) affecting the growth of E7-expressing tumors in mice.