# Toxicological Properties Assessment of Nanovectors derived from PolyEthylimine (PEI) complex used in oncology targeting therapy

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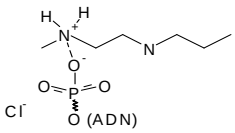
## I- Introduction

Nanomedicine is a rapidly evolving research area offering great potential for application to such field as drug delivery, medical imaging and diagnosis. New Nanovectors are being developed, but efforts are also being devoted to understand the possible toxicity and health implications of engineering nanomatérials. In nanomedicine research field, the estimation of Maximum recommended Starting Dose (MRSD) for first-in-human Clinical Trials of new nanovectors, remains a major problem. Recently our team have developed a program for targeting pancreatic tumours by nanovectors of PolyEthylimine complexed with DNA plasmid (JetPEI_DNA).




The present work is aiming to propose an algorithm of toxicological assessments used for MRSD determination of nanocomplex PEI-DNA.).

## II- Methods

The toxicological studies were based on the "Note for guidance on preclinical evaluation of anticancer medicinal products - CPMP/SWP/997/96, FDA":

- Acute and subacute toxicological studies in the healthy mouse and in the Hamster with pancreatic tumoral graft
- Local tolerance studies by iterated administrations of JetPEI_DNA nanocomplex
- Toxicological study of Simulating protocol proposed in human anticancer therapy combining Chemotherapy (Gemcitabine) and intratumoral administration of JetPEI_DNA nanocomplex

The biodistribution of the plasmid was carried out thanks to quantitative PCR by using the following formula:
[(dCtneo-dCtGAPDH)targeted organ ]–[ (dCtneo-dCtGAPDH) control organ ].
Clinical, biological (Hepatic and renal enzymes), and histological (of 11 organs) analyses were performed

## III- Resultats

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