Tissue distribution of intramuscularly and intratumouraly administered DNA plasmid harbouring apoptotic gene in mice

ABSTRACT

This study investigated the bio-distribution and persistence of plasmid DNA following intramuscular and intratumoural administration in a mice model. Validated quantitative method (real-time qPCR) was used to quantify plasmid distribution in the tissue samples collected at 15 min, 1 h, 24 h and 1 week after administration of 100 εg (1.5 x 1013 copies) of naked plasmids. Plasmids remained in the circulating blood (3.6 ± 2.2 x 102copies/500 ng gDNA) and injected muscle (2.8 ± 1.1 x 105 copies/500ng gDNA) for up to 1 week post administration. Plasmids were also detected in opposite muscle, lung, kidney, spleen, lymph nodes, liver and heart only 1 h post-injection or more. After 2 weeks of treatment, plasmids were retained solely in the tumor mass. These results suggest the presently used recombinant DNA plasmid was benefited with its early transgene expression characteristic which could release the anti-cancerous effect within short dwelling time.

Keyword: DNA vaccine; Recombinant plasmid; Real-time PCR; Biodistribution