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Title: Interleukin 27 (IL27): A new tool for lung cancer gene immunotherapy?

Mr. Tomasz 9161 Wandtke tomasz_wandtke@wp.pl [1], Mr. Marek 9162 Jankowski yangcy@poczta.onet.pl MD [1], Dr. Piotr 9163 Kopinski mpkopins@hotmail.com MD [1], Dr. Mariusz 9164 Bella kowalewskij@co.bydgoszcz.pl MD [2], Prof. Dr Janusz 9165 Kowalewski kowalewskij@co.bydgoszcz.pl MD [2], Mr. Adam 21883 Szpechcinski szpechu@gmail.com [3] and Ms. Ewelina 23201 Pólgesek ewli@poczta.fm [1]. [1] Dept. of Gene Therapy, Collegium Medicum, Nicolaus Copernicus University, Bydgoszcz, Poland, 85-094 ; [2] Dept. of Chest and Tumor Surgery, Collegium Medicum, Nicolaus Copernicus University, Bydgoszcz, Poland, 85-796 and [3] Laboratory of Molecular Diagnostics and Immunology, Institute of Tuberculosis and Lung Diseases, Warszawa, Poland, 01-138 .

Body: Introduction: Recent studies reported strong anti-tumor activity of APC-derived IL27, cytokine driving Th1 immunity and stimulates cytotoxic response. However, IL27 has not been considered yet as a tool in lung cancer gene immunotherapy. Aims: Construction of a plasmid encoding IL27. Evaluation of its transfection efficacy in non-small (A549) and small (NCI-H82) cell lung cancer model lines. Methods: IL27 cDNA was cloned into pSMx-IG plasmid. Lung cancer cells (A549 and NCI-H82) were transfected either with IL27 construct (pXMs-IL27) or empty plasmid as a control. Transfection efficacy was proved by RT-PCR and anti-IL27 immunostaining. Cell cycle and apoptosis (TUNEL assay) was assessed by flow cytometry. Results: pXMs-IL27-transfected cancer cells expressed IL27, as it was revealed by positive RT-PCR and flow cytometry (A549: 79%; NCI-H82: 56%, median of 5 experiments). Unexpectedly baseline IL27 expression was also found in non-transfected cells, particulary in A549 line (40%). Tumor cells transfected with pXMs-IL27 plasmid showed intense apoptosis, as compared with empty plasmid control. Conclusions: We proposed the model of future lung cancer gene immunotherapy with use of IL27 encoding plasmid. However, low IL27 expression in non-transfected lung cancer cells calls in question its antitumor activity as a local immune stimulator. On the other hand, increased apoptosis of transfected cancer cells was observed, suggesting direct impact of IL27 on tumor cells.