

Entomological Compounds Impact on Key Factors of Prostate Adenocarcinoma Progression

Luiza Maria CRACIUN^{1,2}, Brandusa Georgiana DUMITRIU³,
Natalia ROSOIU^{2,4,8}, Manuela Diana ENE^{5,*}, Gina MANDA⁶, Laura OLARIU^{4,7}

¹ PhD student, Junior Researcher, R&D Department, SC Biotehnos SA, 3-5 Gorunului Street, 075100-Otopeni, Ilfov, Romania, (luiza.craciun@biotehnos.com).

² The Doctoral School of Applied Sciences, Ovidius University, Constanta, Romania.

³ PhD, Senior Researcher III, R&D Department, SC Biotehnos SA, 3-5 Gorunului Street, 075100-Otopeni, Ilfov, Romania (dbrandusa@biotehnos.com).

⁴ Academy of Romanian Scientists, 54 Splaiul Independentei 050094, Bucharest, Romania. (natalia_rosoiu@yahoo.com), (lolariu@biotehnos.com)

⁵ PhD, Senior Researcher III, R&D Department, SC Biotehnos SA, 3-5 Gorunului Street, 075100-Otopeni, Ilfov, Romania (diana.ene@biotehnos.com)

⁶ PhD, Senior Researcher I, INCDC Victor Babes, Bucharest, Romania

⁷ PhD, Senior Researcher I, R&D Department, SC Biotehnos SA, 3-5 Gorunului Street, 075100-Otopeni, Ilfov, Romania (lolariu@biotehnos.com)

⁸ Professor Emeritus, Ovidius University, Faculty of Medicine, Constanța, Romania. (natalia_rosoiu@yahoo.com)

* author correspondent (diana.ene@biotehnos.com; diana.ene@gmail.com)

Abstract

Insect's metabolism produces a wide range of protein and peptides as a first defence line against pathogen infection. It has been proved by scientific literature that this class of compounds could impact viruses or tumours, as promising therapies for serious human diseases. We focused our study on the *in vitro* highlighting of anti-tumour properties of a *Lymantria* sp. extract on metastatic prostate adenocarcinoma. The experimental models were designed on standardized cell line DU-145, investigating through flow cytometry relevant anti-cytokines mechanisms (IL-6, IL-8, VEGF), correlated with pro-apoptotic and anti-proliferative phenomena. The entomological tested compounds inhibit with up to 40% the IL6 release, a morbidity mediator in prostate cancer, with maximum 16% for extracellular IL8, a modulator factor of tumour invasion and chemo-resistance, and with over 50% the VEGF signalling, the angiogenesis promoter in metastatic processes. Results show the *in vitro* inhibition of DU-145 metastasis tumour, on anti-cytokine pathway, completing thus the anti-proliferative and pro-apoptotic effects. One of the innovative applications that we propose as a consequence of this research is in the field of drug development focused on theranostic strategies for cancer treatment. The signal transduction pathways that we prove for the entomological extract could be co-modulated with theranostic nanostructures, reducing their toxicity and improving the efficacy.

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Keywords: prostate adenocarcinoma, entomological compounds, cytokines, IL-6, VEGF