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Chemical modification of anticancer parasporins for decreasing their toxicity

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Since the discovery of cancerolytic parasporins of bacterial origin the search for its new parasporal analogs inclusions produced by non-studied strains of B. thuringiensis and reveal of their mechanism of action as candidates for antitumor drugs with low toxic activity *in vivo* are carried out. The scheme proposed for modification of antitumor parasporins is based on more high permeability of vessels for high molecular compounds in foci of tumorigenesis with high concentration of proteases. This condition permits to create the construction composed from active parasporin coupled with a linker particle having diameter of 40-50 nm via a peptide bridge. Proteinous nature of parasporins and revealed amino acid sequences give the possibility to insert cysteine residue into the non-functional domain aimed to use its SH-group for coupling with CO2H group of the peptide via thioester bond. Coupling the peptide with the linker is performed by NH2 group via carbamate bond. Selective delivery of these conjugates to the foci of tumor formation with further proteolytic activation should decrease therapeutic dose of the active substance and decrease concentration in normal healthy organs and tissues with common vascular permeability and resulting in decreasing of general negative effect for the organism. This methodological approach could be used for modification of known antitumor and anti-inflammatory drugs for their targeted delivery and decrease of toxic activity's level.

Biography

Almas Okassov is completing his PhD dissertation in Kazakh National University in Almaty, Kazakhstan. The title of his work is “Obtaining and analysis of parasporins as new cancerolytic agents pretentious origin”. He has 4 papers in peer reviewed journals. He holds the position of the Senior Scientist in laboratory of biotechnology at the Scientific Centre for Anti-Infectious Drugs.

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