CROTAMINE, CELL PENETRATING PEPTIDE, DERIVED FROM SOUTH AMERICAN RATTLESNAKE *CROTALUS DURISSUS TERRIFICUS*

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Highly cationic peptides with low molecular weight, rich in basic amino acids, such as, arginine or lysine, or proline-rich, have been shown to cross the lipid layer barrier of the plasmatic membrane of several cells, usually impermeable for biological molecules. They were generically designated as cell penetrating peptides (CPPs). The number of known natural CPPs is restricted and they vary significantly in their origin, primary sequence and secondary structure. Their penetrating capacity is based on peptide sequences that are responsible for internalization capacity. CPPs internalization efficiency depends on the length of the peptide backbone, since stretches of six to eight arginine residues showed the highest internalization potential. When administered in non-toxic concentrations, the CPPs can be used to transport genes, therapeutic drugs and/or diagnostic probes into the intracellular compartment. The CPPs can be applied not only to genetically manipulate the mammalian genome, but also to provide an experimental model to study the mechanisms of translocation of macromolecules into the senescent cells. However, less is known about their penetrative specificity and also about the interaction with subcellular structures. Recently, we have described a CPP namely crotamine, isolated from the venom of a South American rattlesnake that differs from those CPPs previously reported, due to both a selective penetration intoactively proliferating cells and a singular interaction with some subcellular structures. The putative mechanisms of CPPs penetration into cells and interaction with intracellular structures such as chromosomes, cytoskeleton and centrioles are also addressed. We further discuss the selective penetration of cromatine melanoma murino *in vivo* and suppression of its development.
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