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Disassembling a Cancer Puzzle: Cell Junctions and Plasma Membrane as Targets for Anticancer Therapy

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Summary

Despite an enhanced permeability and retention effect typical of many solid tumors, drug penetration is not always sufficient. Possible strategies for the drug delivery improvement are a modification of the tumor cell-to-cell junctions and usage of cell membrane permeabilization proteins. In this review we discuss epithelial cell junctions as targets for a combined anticancer therapy and propose new possible sources of such agents. We suggest considering viral and bacterial pathogens disrupting epithelial layers as plentiful sources of new therapeutic agents for increasing tumor permeability for other effector agents. We also observe the application of pore forming proteins and peptides of different origin for cytoplasmic delivery of anti-cancer agents and consider the main obstacles of their use *in vivo*.

Key words: cell junctions, cancer, enhanced permeability, junction opener, pathogens, pore-forming toxins.

Introduction

1. Major types of epithelial cell junctions

Cell junctions are very important membrane protein complexes associated with cytoskeleton, which provide integrity of tissues and play a significant role in the intercellular communication. According to their functions, junctions of animal cells can be classified into three groups [1]. One group named ‘anchoring junctions’ includes desmosomes, adherence

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