

理学国際教育研究センター 研究セミナー

From plant defense to tumor attack: multiple approaches of toxin delivery for cancer treatment

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専門分野: タンパク質科学(毒素)、細胞分泌小胞

日時: 令和 6 年 7 月 19 日(金) 13:15 より

場所: 中百舌鳥キャンパス A12 棟
(旧サイエンスホール)

事前参加申し込みは不要です。
会場まで直接お越しください。



The selective pressure by the environment on plants has led to the development and optimization of highly efficient toxin molecules, which may represent potent and efficient cytotoxic agents. Plant ribosome-inactivating protein (RIP) toxins are N-glycosidases found among most plant species and distributed in several tissues being endowed with defensive functions against fungal or viral infections. Their high molecular stability and potency as well as direct cell-killing property make this class of cytotoxic agents very attractive for the development of anti-cancer therapies. We have produced and characterized several recombinant chimeric proteins based on the RIP saporin fused to targeting domains directed against molecules over-expressed on tumor cells or microenvironment. Once purified and tested on cancer cell lines, they resulted effective in inducing apoptotic cell death and selectively toxic for those expressing target receptors. We demonstrated that saporin-containing chimeras significantly reduced tumor growth *in vivo*, by employing different mouse models of bladder cancer, and increased the overall survival of the animals.

We have been currently exploring alternative delivery systems for toxins, represented by extracellular vesicles, biological nanocarriers able to accommodate exogenous proteins and convey them to recipient cells, in order to develop further biomedical applications.

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