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Pasteurella multocida thymidine kinase 1 efficiently activate pyrimidin nucleoside analogs

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Abstract

In the Pasteurella multocida genome only one putative deoxyribonucleoside kinase encoding gene, for thymidine kinase 1 (PmTK1), was identified. The PmTK1 gene was sub-cloned into Escherichia coli KY895 and it sensitized the host towards 2',2'-difluoro-deoxycytidine (gemcitabine, dFdC), 3'-azido-thymidine (AZT) and 5-fluoro-deoxyuridine (5F-dU). PmTK1 was over-expressed and purified with two different tags. Apparently, deoxyuridine (dU), and not thymidine (dT), is the preferred substrate. We suggest that PmTK1s could be employed as a species-specific activator of uracil-based nucleoside antibiotics

Keywords: Thymidine kinase, nucleosides, Pasteurella multocida, Antibiotics