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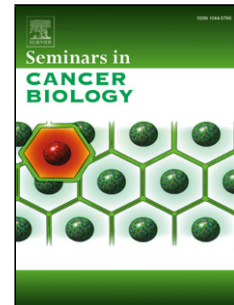
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Review

Lysosomal cysteine peptidases – molecules signaling tumor cell death and survival

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Abstract

Lysosomal cysteine peptidases – cysteine cathepsins – are general intracellular protein-degrading enzymes that control also a variety of specific physiological processes. They can trigger irreversible events leading to signal transduction and activation of signaling pathways, resulting in cell survival and proliferation or cell death. In cancer cells, lysosomal cysteine peptidases are involved in multiple processes during malignant progression. Their translocation from the endosomal/lysosomal pathway to nucleus, cytoplasm, plasma membrane and extracellular space enables the activation and remodeling of a variety of tumor promoting proteins. Thus, lysosomal cysteine peptidases interfere with cytokine/chemokine signaling, regulate cell adhesion and migration and endocytosis, are involved in the antitumor immune response and apoptosis, and promote cell invasion, angiogenesis and metastasis. Further, lysosomal cysteine peptidases modify growth factors and receptors involved in tyrosine kinase dependent pathways such as MAPK, Akt and JNK, thus representing key signaling tools for the activation of tumor cell growth and proliferation.

Keywords:

Lysosomal peptidases, Cathepsins, Cancer, Signaling

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