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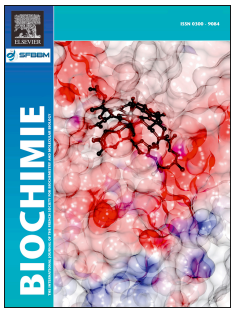

Cysteine cathepsins as a prospective target for anticancer therapies—current progress and prospects

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Abstract: Cysteine cathepsins (CTS), being involved in both physiological and pathological processes, play an important role in the human body. During the last 30 years, it has been shown that CTS are highly upregulated in a wide variety of cancer types although they have received a little attention as a potential therapeutic target as compared to serine or metalloproteinases. Studies on the increasing problem of neoplastic progression have revealed that secretion of cell-surface- and intracellular cysteine proteases is aberrant in tumor cells and has an impact on their growth, invasion, and metastasis by taking part in tumor angiogenesis, in apoptosis, and in events of inflammatory and immune responses. Considering the role of CTS in carcinogenesis, inhibition of these enzymes becomes an attractive strategy for cancer therapy. The downregulation of natural CTS inhibitors (CTSsis), such as cystatins, observed in various types of cancer, supports this claim. The intention of this review is to highlight the relationship of CTS with cancer and to present illustrations that explain how some of their inhibitors affect processes related to neoplastic progression.