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PRMT5 prognostic value in cancer

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ABSTRACT

Protein arginine methyltransferases (PRMTs) catalyze the methylation of arginine residues on both histones and non-histone proteins. PRMT5, a member of the PRMT family, is overexpressed in a wide variety of cancers and its activity is associated with cell transformation. Moreover, its expression is associated with a decrease in patient survival in several cancers, a rationale for developing highly potent inhibitors of its enzymatic activity. However, most studies do not take into account the subcellular localization of PRMT5, which can modify its properties. Indeed, our team recently showed that PRMT5 nuclear expression is associated with prolonged survival. These results corroborated findings in prostate cancer, in which the nuclear fraction of PRMT5 was responsible for inhibiting cell growth, while the cytoplasmic fraction promoted cell growth. In conclusion, this criterion should be evaluated prior to administering PRMT5 inhibitors, which may have adverse effects.
our own group for PRMT5, the nuclear expression of which is of good prognosis and associated with prolonged survival. Furthermore, our study demonstrated a positive correlation between nuclear PRMT5 and LKB1, illustrated by an increase in survival exclusively in LKB1-positive patients displaying a nuclear PRMT5 expression [11]. These findings, suggest a functional relationship between these proteins which merits further investigation. Finally, our results also corroborated findings in prostate cancer, in which the nuclear fraction of PRMT5 was detected in benign prostate epithelial cells and was responsible for inhibiting cell growth and limiting their proliferation, while the cytoplasmic fraction that was found in cancerous prostate tissues and promoted cell growth [12].

Overall these observations emphasize the importance of PRMT5 localization in regulating its activity and its oncogenic properties. This criterion should be evaluated prior to administration of PRMT5 inhibitors, which may thus have adverse effects. It would be of interest to understand the mechanisms involved in PRMT5 regulation in the nucleus of tumoral cells and to investigate whether its dual prognostic value can be extended to other cancers.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

REFERENCES
