



Review

Protein kinase C ϵ as a cancer marker and target for anticancer therapy

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Abstract:

Protein kinase C ϵ (PKC ϵ) is a representative member of a family of novel PKC isoforms that are independent of calcium, but can be activated by phorbol esters, diacylglycerol (DAG) and phosphatidylserine (PS). This kinase is capable of modulating crucial cell functions, including proliferation, differentiation and survival. These activities depend on enzyme translocation to subcellular compartments upon binding DAG, PS or exogenous stimulators. PKC ϵ initiates malignant transformation of cells through its effects on the Ras/Raf/MAPK pathway and displays the greatest carcinogenic potential of all PKC isoforms. PKC ϵ also promotes tumor metastatic capacity and resistance to anti-cancer therapy. Overexpression of PKC ϵ is found in numerous cancers including colon, breast, stomach, prostate, thyroid and lung and is considered an important marker of negative disease outcome. Although overexpression of PKC ϵ is observed in tumors, it is not found in healthy tissues hence it has been suggested as a diagnostic marker or a putative target for specific inhibitors used for treatment of cancer. Research on selective inhibition of PKC ϵ is under way and diverse approaches may become clinically applicable anti-tumor strategies. Suppression of the PKC ϵ -encoding gene achieved through the antisense cDNA, suppression of PKC ϵ with RNAi and inhibition achieved with translocation-inhibitory peptides may provide novel treatment strategies for cancer.

Key words:

protein kinase C ϵ , carcinogenesis, protein kinase C ϵ inhibition
