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Transforming Growth Factor- β (TGF- β) Induces Invasion and Migration of MCF10A Human Breast Epithelial Cells

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Transforming growth factor (TGF)- β , a hormonally active polypeptide found in normal and transformed tissue, is a potent regulator of cell growth and differentiation. In this study, we examined the effect of TGF- β on invasion and motility of MCF10A human breast epithelial cells. TGF- β induced migration and invasive phenotype of the parental MCF10A cells in a dose-dependent manner. Activity of MMP-2 promoter was increased by TGF- β , suggesting that the TGF- β -induced invasive phenotype may possibly be mediated by MMP-2 rather than MMP-9. TGF- β -stimulated invasive and migratory properties were decreased by inhibition of the p38 MAPK and ERK pathways by SB203580 and PD98059, respectively. We show that TGF- β induces prominent morphological changes of MCF10A cells which was also abolished by SB203580 and PD98059. The present study suggests that TGF- β -induced cell migration and invasion as well as morphological changes involves activation of both p38 MAPK and ERK pathways and is associated more closely with the expression of MMP-2 rather than MMP-9. [Supported by the Korea Food and Drug Administration Grant (KFDA-03092-LIF-000)]

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