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DIFFERENT EFFECTS OF QUERCETIN ON MATRIX METALLOPROTEINASES EXPRESSION IN EARLY AND LATE PASSAGE HUMAN FIBROBLASTS

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Bioflavonoids have been regarded as therapeutic agents for a wide range of disease including cancer. The increase of matrix metalloproteinases expression is a key event in several pathological conditions, e.g., dermal photocarcinogenesis, tumor initiation, invasion and metastasis. In this study, we investigated effects of quercetin, a major bioflavonoid in human diet, on matrix metalloproteinase (MMP)-1, MMP-2, MMP-3, MMP-9 mRNA expression during cellular aging in cultured human foreskin fibroblast. Quercetin increased MMPs expression except MMP-2 in early passage fibroblasts in dose-dependent manner, its maximal effect occurred at 50 μM quercetin. However, in late passage fibroblast, all of MMPs expressions except MMP-2 are decreased by quercetin at 10 μM concentration. MMP-2 expression in both early and late passage was slightly reduced by quercetin at 50 μM. Quercetin pretreatment at 20 μM decreased TPA-induced MMPs expression in late passage fibroblasts, but quercetin has no effect in early passage fibroblasts. Similar results were obtained for MMPs promoter assay. This opposite effect of quercetin may be resulted from the changes of signaling components during cellular aging of normal human fibroblasts. These results indicate that quercetin has different effects on MMPs expression during cellular aging of human fibroblasts.