

Abstract

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Exogenous coenzyme Q10 modulates MMP-2 activity in MCF-7 cell line as a breast cancer cellular model.

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BACKGROUND/AIMS: Matrix Metalloproteinases 2 is a key molecule in cellular invasion and metastasis. Mitochondrial ROS has been established as a mediator of MMP activity. Coenzyme Q10 contributes to intracellular ROS regulation. Coenzyme Q10 beneficial effects on cancer are still in controversy but there are indications of Coenzyme Q10 complementing effect on tamoxifen receiving breast cancer patients.

METHODS: In this study we aimed to investigate the correlation of the effects of co-incubation of coenzyme Q10 and N-acetyl-L-cysteine (NAC) on intracellular H₂O₂ content and Matrix Metalloproteinase 2 (MMP-2) activity in MCF-7 cell line.

RESULTS AND DISCUSSION: Our experiment was designed to assess the effect in a time and dose related manner. Gelatin zymography and Flowcytometric measurement of H₂O₂ by 2',7'-dichlorofluorescein-diacetate probe were employed. The results showed that both coenzyme Q10 and N-acetyl-L-cysteine reduce MMP-2 activity along with the pro-oxidant capacity of the MCF-7 cell in a dose proportionate manner.

CONCLUSIONS: Collectively, the present study highlights the significance of Coenzyme Q10 effect on the cell invasion/metastasis effector molecules.

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