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Apelin increases MCF-7 cell viability independently of Estrogen

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Despite undetectable levels of estrogen in post-menopausal patients with estrogen receptor-α positive (ERα)+ breast cancer and treated by aromatase inhibitors (AIs), resistance to AIs frequently occurs. The continued growth of resistant cells, which is no longer promoted by estrogen, supposes that independent pathways of these hormones can replace their effects, in order to perpetuate growth signals in tumors (ERα)+. Apelin, a recently discovered hormone, is known for its mitogenic effect on a wide variety of normal tissues and cell line models. By using the (ERα)+ MCF-7 breast cancer cell line, we demonstrate an estrogen-independent role of apelin on cell growth. First, we confirmed for the first time the constitutive expression of the apelin receptor (Apelin peptide jejunum, APJ) in MCF-7 cells by immunocytochemistry. Subsequently, 0.1, 1, 10, 100 and 1000 nM concentrations of apelin-13 were separately applied to the MCF-7 cells under estrogen free condition, or 100 nM concentrations of apelin-13, in the presence or absence of 1 nM estrogen-2, were administrated to MCF-7 cells. The cells were incubated for 1, 3, or 5 days. Effects of apelin-13 and estrogen-2 on MCF-7 cell viability were determined using Alamar blue assay. We found that apelin-13 increased MCF-7 cell viability in a dose-dependent manner. Interestingly, the mitogenic effect of apelin-13 or estrogen-13 applied separately was abolished by the combination of the two hormones. Our results demonstrated that apelin-13 induced similarly sustained the viability of MCF-7 as with estrogen and suggested a new pathway of estrogen-independent mechanisms of AI resistance. Our data also suggest that apelin-13 modulate the well-established dual role of estrogen on (ERα)+ tumors

Biography

Rim Bouchelaghem is currently a PhD student at the biochemistry and environmental toxicology laboratory at Universite Badji Mokhtar in Annaba (UBMA), Algeria. Her research concentrates on the discovery of biomarkers in breast cancer. She got her first doctoral degree in Medicine from UBMA, and second an MSc degree in immunology from Universite de Sherbrooke (UdeS), Canada. She is working on molecular analysis at the anatomo-pathology section of the Anti-Cancer Center (CAC) Abdelaziz Al Saoud of Annaba. she is achieving molecular analysis of tumors for diagnostic subtyping of tumors.

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