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28628 – ANTIPROLIFERATIVE EFFECT OF CAFFEINE ON A TRIPLE-NEGATIVE BREAST CANCER CELL LINE

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Introduction: Among the main types of cancers leading to women's mortality, breast cancer is prominently highlighted. Specifically, triple-negative breast cancer (TNBC) is characterized by the lack of expression of progesterone, estrogen, and HER2 receptors, which limits the effectiveness of standard antineoplastic therapies since hormone therapy is ineffective, thereby increasing the risk of metastasis and recurrence. In this context, natural compounds are being studied for potential adjuvant use alongside traditional treatments. **Methodology:** Experiments were conducted in the cell culture laboratory at the Federal University of the Southern Border (UFFS). The cell lines used were MDA-MB-231 (triple-negative breast cancer) and CCD1059sk (mammary region fibroblasts), obtained from the Rio de Janeiro Cell Bank (BCRJ). Cells were cultured in 96-well plates at a density of 2x10^4 cells per well until 90% confluence. Subsequently, they were treated with varying concentrations of caffeine (0.5 mM, 1 mM, 2 mM, 4 mM) for 24 hours. Cell viability was assessed using the MTT assay (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide). Statistical analyses were performed using one-way ANOVA and Tukey's post hoc test in GraphPad Prism 9.0 software. Results were considered statistically significant when $p<0.05$. This study was submitted to the UFFS Research Ethics Committee and approved under opinion nº 3.421.380, with the Certificate of Presentation for Ethical Review (CAAE) nº 09306919.5.0000.5564. **Conclusion**: It was observed *in vitro* that caffeine decreases the viability of MDA-MB-231 breast cancer cells and has no cytotoxic effect on non-tumorigenic cells (CCD1059sk).