

Is tamoxifen cytotoxicity against breast cancer cells influenced by xenoestrogens?

Rita Couto^{1,2}, Beatriz Cunha^{1,2}, Eduardo Rocha^{1,2}, Fernanda Malhão^{1,2}

¹Laboratory of Histology and Embryology, Department of Microscopy, ICBAS – School of Medicine and Biomedical Sciences, University of Porto (U.Porto), Rua Jorge Viterbo Ferreira 228, 4050-313 Porto, Portugal. ²Team of Animal Morphology and Toxicology, CIIMAR/CIMAR – Interdisciplinary Centre of Marine and Environmental Research, University of Porto (U.Porto), Terminal de Cruzeiros do Porto de Leixões, Av. General Norton de Matos s/n, 4450-208 Matosinhos, Portugal.

INTRODUCTION

Breast cancer (BC) is the most diagnosed cancer worldwide¹. The prevalent BC subtype is the hormone-positive tumour expressing high levels of estrogen and progesterone receptors². Endocrine therapy with selective estrogen receptor modulators (SERMs) such as Tamoxifen (Tam) is widely used³.

Humans are regularly exposed to xenoestrogens. Chemicals like bisphenol A (BPA) and endosulfan (End) mimic the natural endogenous estrogen in many pathways⁴. BPA is present in polycarbonate plastic in food and drink packaging. End is a probable carcinogenic pesticide to humans and is still illegally used in some countries. Humans are exposed to BPA and End through ingestion⁵, and we wonder if such exposure may model the Tam impacts against BC cells.

AIM

To investigate the *in vitro* cytotoxicity effects of Tam, BPA, and End in single-exposures and co-exposures (Tam+BPA and Tam+End) on the MCF7 cell line (representative of hormone-positive BC).

RESULTS AND DISCUSSION

METHODOLOGY

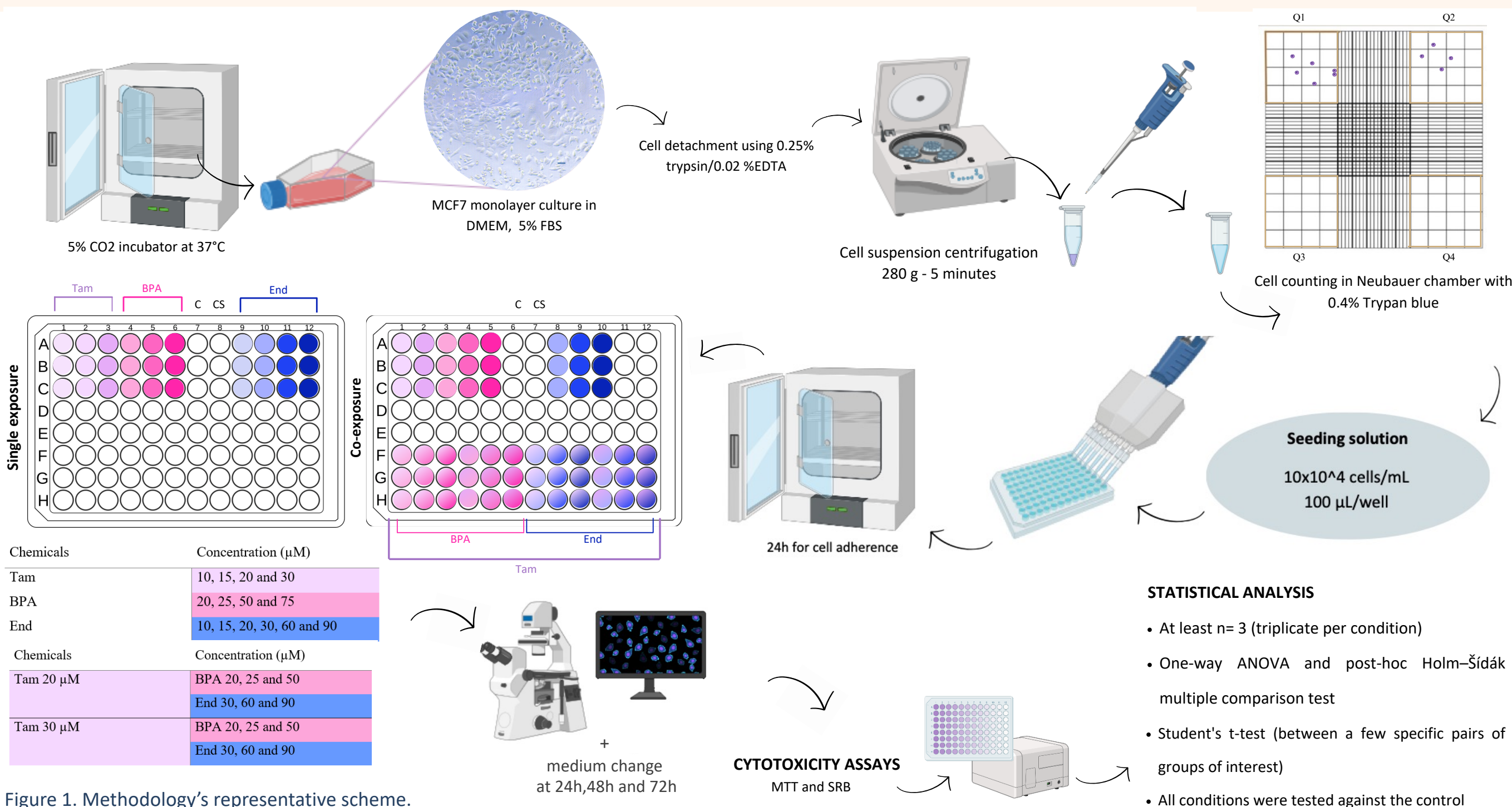


Figure 1. Methodology's representative scheme.

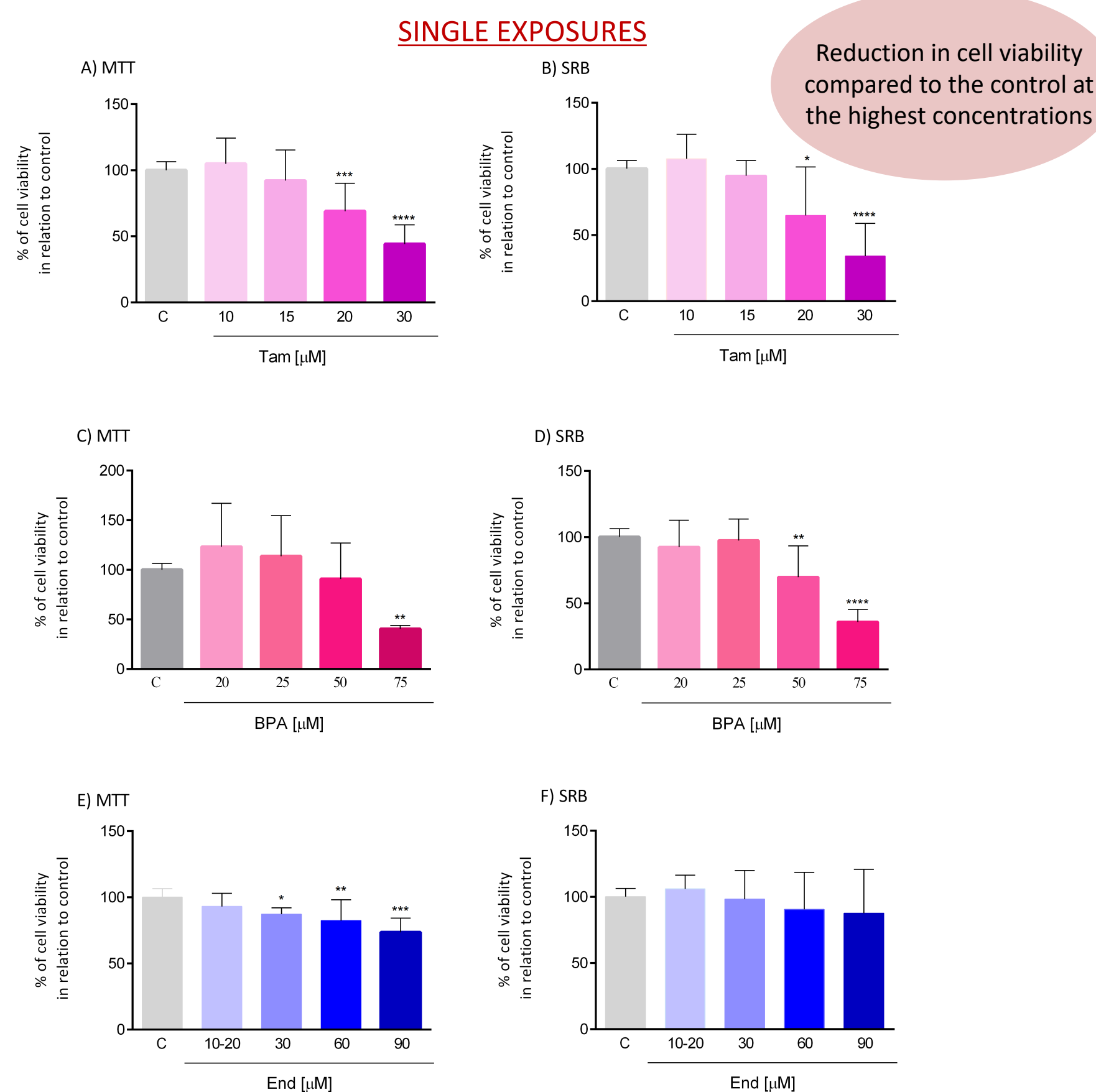


Figure 2. Cytotoxic effects of Tam, BPA and End assessed by MTT (A, C and E) and SRB (B, D and F) assays after 72h of exposure. Cell viability percentage is relative to the control and presented as mean±SD (* p < 0.05, ** p < 0.01, *** p < 0.001, **** p < 0.0001).

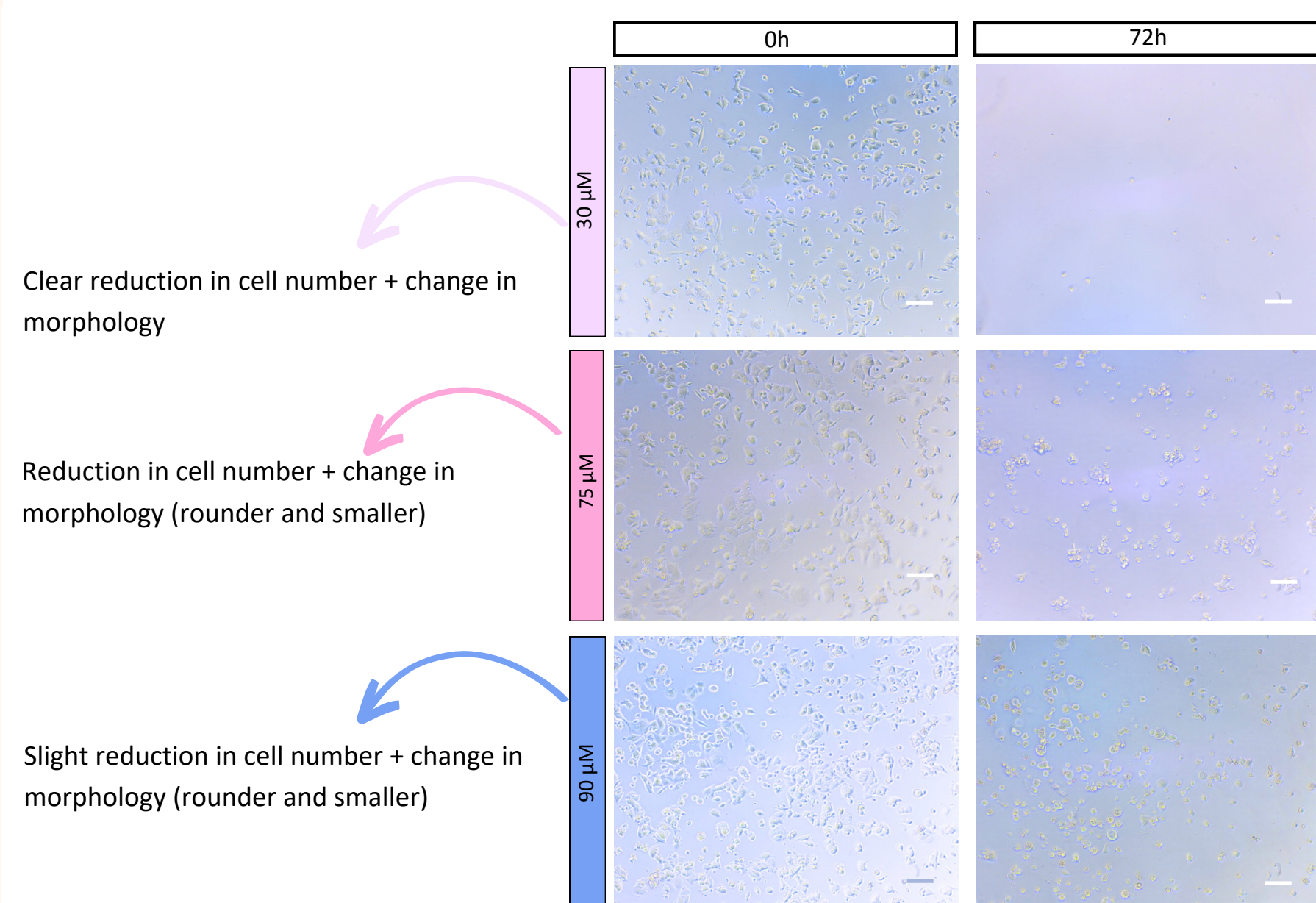


Figure 3. Representative images of MCF7 at 0h and 72h of exposure to Tam, BPA and End. Scale bar: 100 µm.

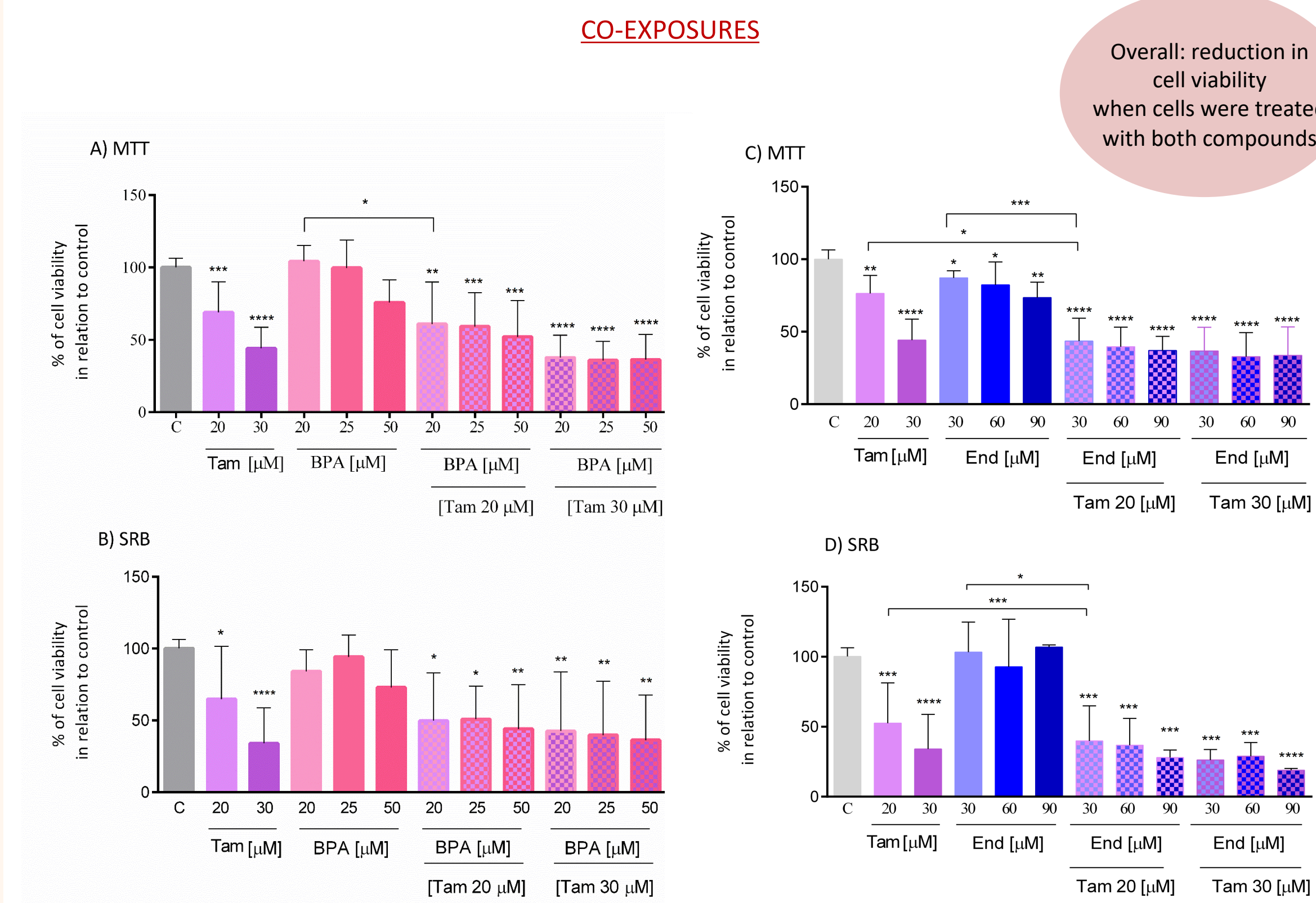


Figure 4. Cytotoxic effects on MCF7 cells treated with Tam combined with BPA and End assessed by MTT (A and C) and SRB (B and D) assays after 72h of exposure. The percentage of cell viability is relative to the control and presented as mean±SD. Square brackets show significant differences tested with Student's t test (* p < 0.05, ** p < 0.01, *** p < 0.001, **** p < 0.0001).

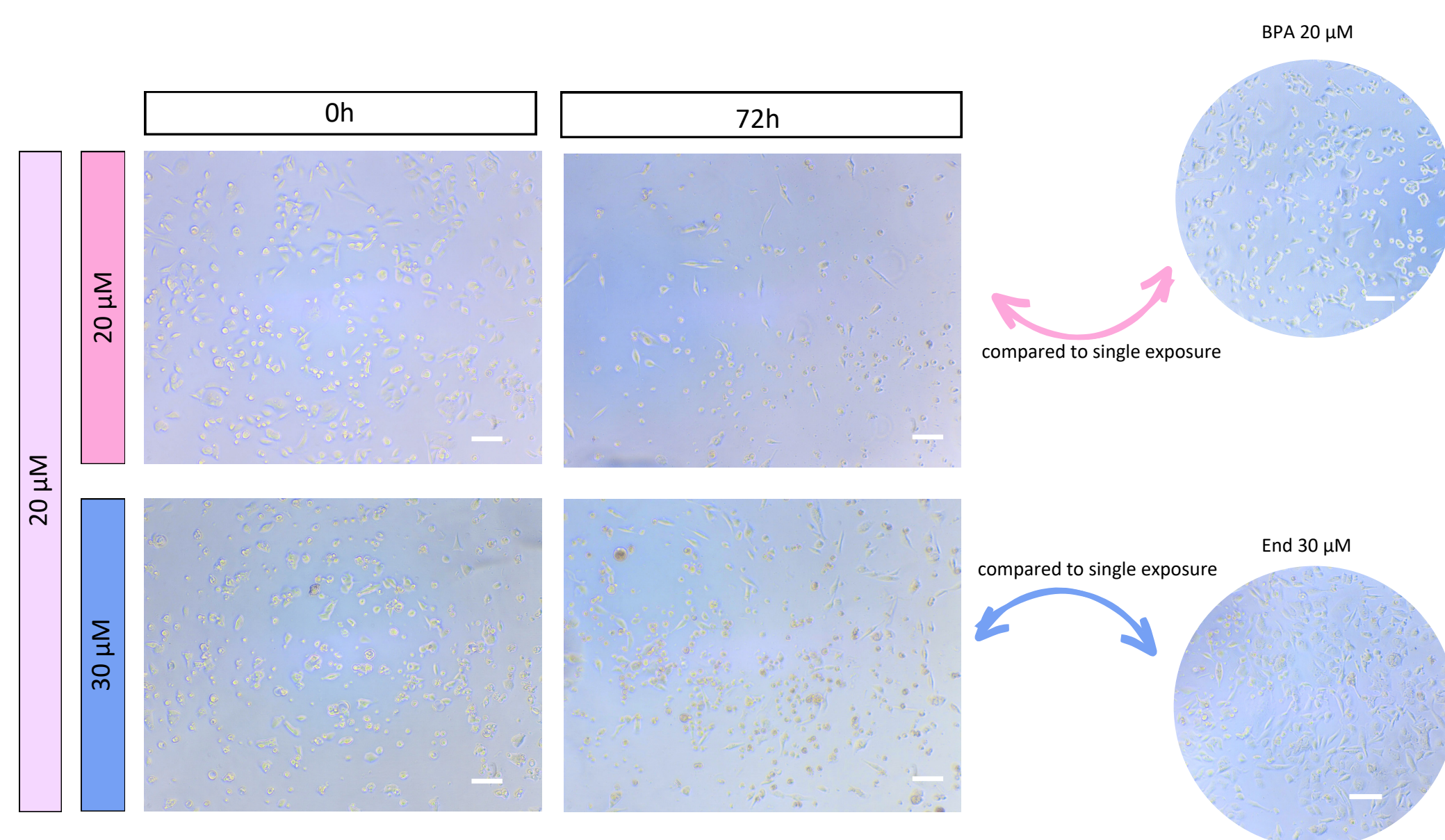
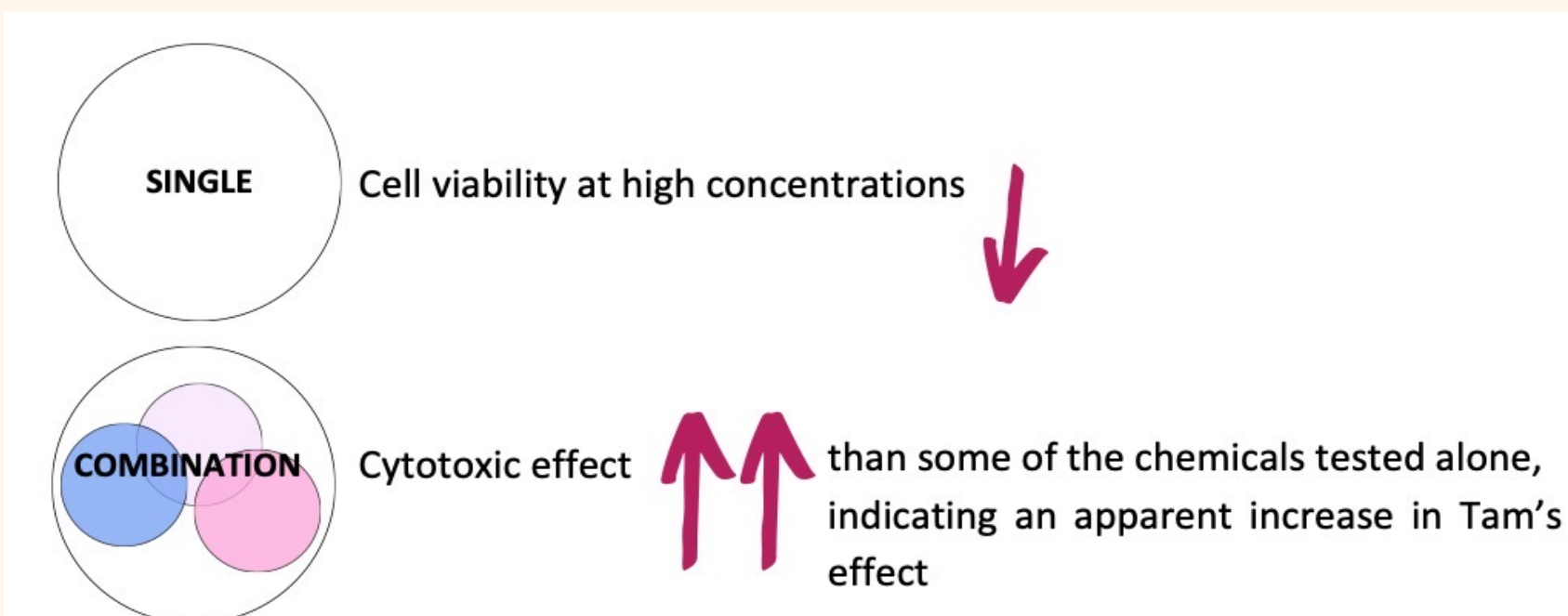


Figure 5. Representative images of MCF7 during the co-exposure with Tam 20 µM + BPA 20 µM and Tam 20 µM + End 30 µM. Scale bar: 100 µm.

CONCLUSION



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