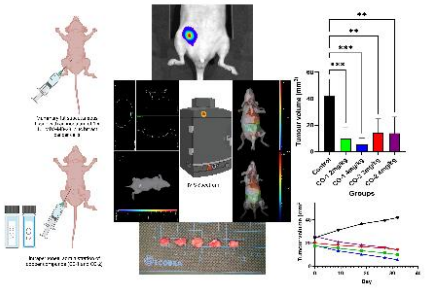
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# COMPARATIVE EVALUATION OF ANTICANCER EFFICACY AND TOXICITY OF COPPER (II) COMPLEXES CO-1 AND CO-2 IN A XENOGRAFT MODEL OF BREAST CANCER

**Dragoș Constantin ANIȚĂ[1], Robert CAPOTĂ[1], Laurian Cristian COJOCARIU[1], Mariana GRECU[1], Andra-Cristina BOSTĂNARU-ILIESCU[1], Mihai MAREȘ[1], Valentin NĂSTASĂ[1]**

[1] Faculty of Veterinary Medicine, "Ion Ionescu de la Brad" Iasi University of Life Sciences (IULS), 8 Mihail Sadoveanu Alley, 700489 Iasi, Romania;



Graphical abstract

**Abstract.** The study aims to evaluate the anticancer activity of two copper (II) complexes, CO-1 and CO-2, using a xenograft model in athymic nude mice (Swiss nu-nu/Ncr) implanted with human breast cancer cells (MDA-MB-231-Luc). Copper-based compounds have shown promise in targeting breast cancer cells, and this study explores their efficacy and potential toxicity.

Twenty-five mice were injected with $1x10^5$ MDA-MB-231-Luc cells subcutaneously in mammary fat tissue. Mice were divided into five groups and administered either 2 mg/kg or 4 mg/kg doses of CO-1 or CO-2 intraperitoneally over 12 sessions. Tumor volume and body weight were monitored, and bioluminescence imaging was used to assess tumor progression and metastasis. The results indicated a dose-dependent inhibition of tumor growth. CO-1 at 4 mg/kg achieved the highest tumor growth inhibition (69.48%), while CO-2 at the same dose showed 45.99% inhibition. However, CO-2 caused greater toxicity, resulting in significant body weight loss (18.34%), while CO-1 had minimal toxicity (5.44% weight loss). Bioluminescence imaging confirmed tumor regression in CO-1-treated groups and detected metastases in the control group.

CO-1 demonstrated potent anticancer activity with manageable toxicity, making it a promising candidate for further investigation. In contrast, CO-2, while effective, exhibited higher toxicity, limiting its therapeutic potential. These findings suggest that CO-1 may offer a viable treatment option for breast cancer with reduced side effects.

**Keywords:** copper complexes, anticancer activity, xenograft model, breast cancer, IVIS-Spectrum.