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Cisplatin-naproxen conjugate free and loaded in SBA-15 indicate morphological changes and antitumor activity *in vivo* in mouse melanoma model

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Overexpression of cyclooxygenase (COX) and thus, prostaglandin E2 in numerous cancers justified COX inhibitors testing in cancer prevention or treatment[1]. Conjugate molecules of COX inhibitors and common chemotherapeutic drugs, as well as their immobilization in nanoparticles that increases drug delivery and accumulation in tumor tissue, can potentially improve approaches in cancer therapy. Cisplatin-naproxen conjugate and corresponding SBA-15 counterpart decreased the viability of B16 cells. Enlarged and elongated cells with distinctly granular cytoplasm and the increased presence of lipid droplets were noticed after haematoxylin–eosin and Oil Red O staining of treated cultures. In addition, enormous nuclei and markedly heterochromatin foci were confirmed by PI staining indicating establishment of senescent state upon the treatment. Alongside, differentiation of melanoma cells toward melanocytes was demonstrated by elevated tyrosinase activity and presence of melanin, thus leading to reduced tumorigenic potential *in vivo*. In addition, cisplatin-naproxen conjugate and corresponding SBA-15 counterpart significantly reduced melanoma growth in C57BL/6 mice, with lesser signs of toxicity compared to cisplatin as a positive control. Strong antitumor potential of both, free and immobilized conjugates on mouse melanoma cells opens numerous possibilities for further research.

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