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Anticancer properties of cisplatin-naproxen conjugate: free and loaded in SBA-15

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To develop anticancer drugs with higher activity and reduced toxicity, cisplatin was used as a scaffold to bear the anti-inflammatory drug naproxen and this conjugate was loaded into silica nanoparticles, SBA-15. In this study, the cytotoxic effect of the free conjugate and the one loaded in SBA-15 was evaluated on different cancer cell lines of mouse origin (B16, 4T1, CT26 and MC38). Treatment with free, as well as with SBA-15-bound conjugate, dose-dependently decreased viability of all cancer cell lines. The viability decrease of B16 cells after treatment with both agents was not caused by apoptosis, but it was followed by caspase activation. On the other hand, treatment with both agents caused significant decrease of B16 cells division rate, indicating the primary cytostatic effect of these agents. Additionally, it was shown that treatment with the free conjugate caused intensified autophagy, while the conjugate loaded into SBA-15 did not show this effect. Since the viability of cells recovered upon the exposure to 3-methyl adenine, detected autophagy serves as a cell death mechanism. Overall, these results indicate that both nacked and immobilized conjugates show great potential for cancer treatment.

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References

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