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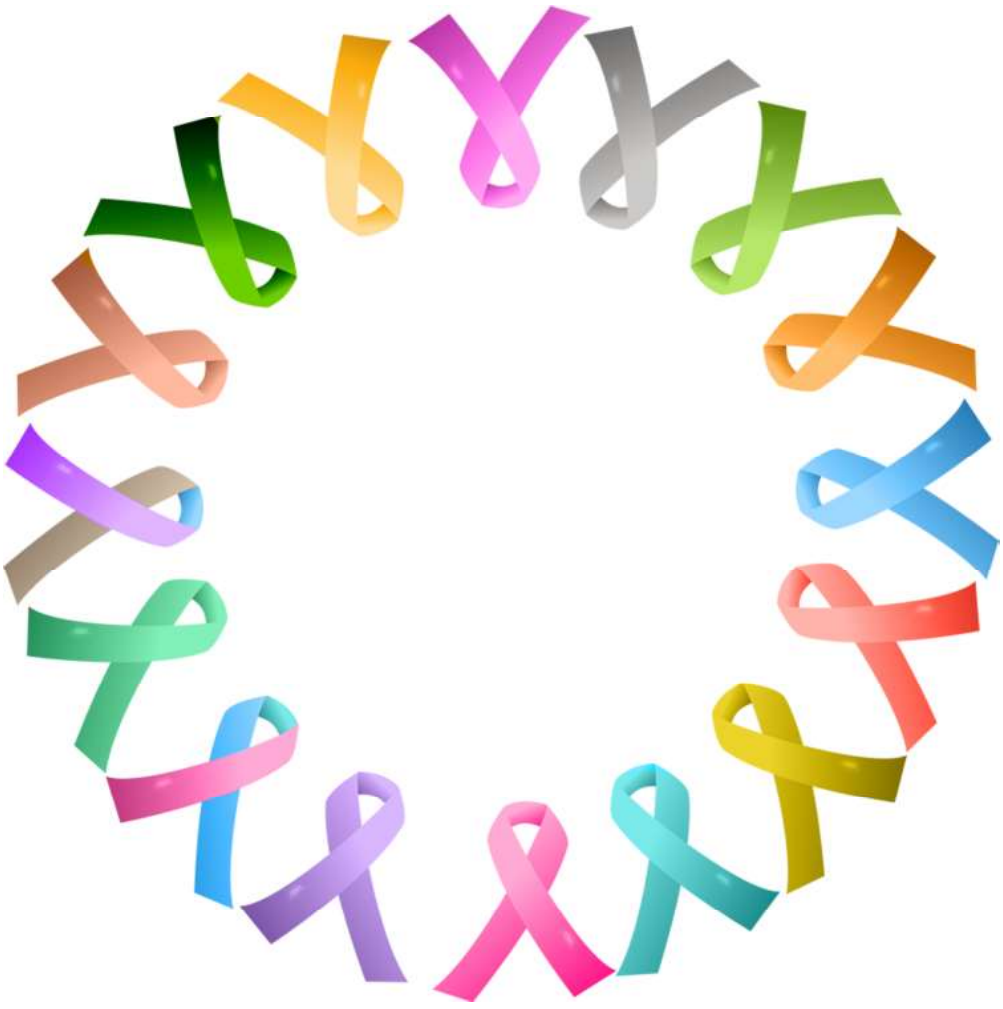

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The first number of Oncology Insights includes
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higher selectivity and reduced toxicity, a new organo-diiron complex with a bridging thiocarbyne ligand (FeSDAP) was synthesized. **Material and Methods:** The cytotoxic effect of FeSDAP was investigated on mouse cancer cell lines (B16-F1 low-invasive melanoma, B16-F10 high-invasive melanoma and 4T1 breast cancer), as well as on mouse embryonic fibroblasts (NIH-3T3). For investigation of its mechanism of action, flow cytometry and light microscopy were used. To investigate how 72h long exposure to DMAP *in vitro* affects the potential of B16-F1 and B16-F10 cells to form tumor in vivo, respective subcutaneous synegenic models in C57BL/6 mice were used. **Results and Conclusions:** Treatment with FeSDAP decreased viability of all cells after 72 hours, with significantly less potent effect on embryionic fibroblasts compared to cancer cells, suggesting FeSDAP may possess selectivity towards a malignant phenotype. Melanoma cells were almost equally sensitive to the treatment, but more sensitive than breast cancer cells, so both B16-F1 and B16-F10 were selected for further comparative investigation. Treatment with FeSDAP inhibited proliferation of melanoma cells and caused substantial change in their morphology, which was even more pronounced when it comes to B16-F10 cells. After microscopic evaluation, it was shown that melanoma cells went into senescence. Prominent morphological change of B16-F10 cells was caused by transdifferentiation into Schwann Cell-Like Cells. Further investigation of tumorigenic potential of treated melanoma cells in mice showed that the average tumor size in the groups that received treated cells was significantly smaller, suggesting that melanoma cells have persistently reduced potential to form tumor after single in vitro treatment with FeSDAP. Ultimately, these results strongly indicate that investigated diiron thiocarbyne complexes may display a promising antitumor potential that will be investigated in more detail.
Keywords: cell transdifferentiation, cellular senescence, iron compounds, melanoma

O09

The effects of cisplatin-ibuprofen conjugate free and immobilized in mesoporous nanostructured silica on the change of morphology of mouse melanoma cells, and antitumor potential *in vivo*

Teodora Komazec[1], Ekatarina Mihajlović[1], Dijana Bovan[1], Sanja Mijatović[1], Ivana Predarska[2,3], Evamarie Hey-Hawkins[3],Goran N. Kaluđerović[2],Danijela Maksimović-Ivanić[1]
[1]*Department of Immunology, Institute for Biological Research "Siniša Stanković", National Institute of the Republic of Serbia, University of Belgrade, Belgrade; Serbia*
[2]*Department of Engineering and Natural Sciences, University of Applied Sciences Merseburg, Merseburg, Germany*
[3]*Faculty of Chemistry and Mineralogy, Institute of Inorganic Chemistry, Leipzig University, Leipzig; Germany*

Background: Active contribution of cyclooxygenase enzymes (COX) and their products, in particular prostaglandin E2, to tumor progression makesthis enzyme an attractive target for molecular therapy in cancer. The combination of conventional chemotherapeutic drugs with COX1/2 inhibitors, and further enhancement of their delivery into target tissue can be a highly prospective approachin cancer therapy, especially in advanced stages. Accordingly, a cytostatic and anti-inflammatory drug conjugate was synthesised, as well as its immobilization in mesoporous nanostructured silica SBA-15. Detailed evaluation of the cytotoxic potential and the mechanism of action of this conjugate and the appropriate materialon B16 cells was further performed*in vitro*and *in vivo*. **Material and Methods:** Cell viability of B16 melanoma cells was determined by MTT and CV assays. Cell morphologywas estimated byhematoxylin–eosin andOil Red O staining using light microscopy, whilechanges in thenucleiwere validatedby PI staining using fluorescent microscopy. Differentiation of melanoma cells was determined by measurement of tyrosinase activityand the presence of melanin. Syngeneic C57BL/6 mice modelwas used for *in vivo*assessment of the tumorigenic potential of B16 cellsexposed tofree and SBA-15 loaded conjugate*in vitro*, as well as for the evaluation of the antitumor potential of the experimental substances given in the therapeutic regimen. **Results and Conclusion:** Exposure to free or immobilized cisplatin-ibuprofen conjugatedecreasedthe viability of the B16 cell culturewhile morphology of survived cells was changed. Cytoplasm of enlarged and elongated cells showed intensive granularity with enhanced lipid contentand huge irregularly shaped nuclei with prominent heterochromatin foci, all of which indicated senescent state. Increased activity of tyrosinase and the presence of melanin compared to the control, referred to the differentiation of melanoma cells toward primary phenotype.Further inoculation of pretreated B16 cells into C57BL/6 mice showed decreased potential to form tumor incomparison to tumorigenic potential of untreated cells.Additionally, *in vivo* application of free and SBA-15 immobilized conjugatein therapeutic regimentled to statistically significant reduction of tumor volume, with only fewer signs of toxicity compared to cisplatin as positive control.New knowledge about this compound and corresponding materialis reflected in their antitumor potential on mouse melanoma cells, which opens numerous possibilities for further research.
Keywords:cell differentiation, cisplatin, ibuprofen, melanoma, nanoparticles, senescence