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Ozonides as promising anticancer agents

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Organic peroxides have significant potential for creating on their basis new medicinal agents. In recent decades, the chemistry of organic peroxides has been intensively developing due to the detection of antimalarial, anthelmintic, antitumor, growth regulation, and antitubercular activity. The greatest progress in the development of medicinal agents on the base of synthetic peroxides is associated with compounds that contain an ozonide (1, 2, 4-trioxolane) moiety.

In our studies, a general approach to the preparation of bicyclic ozonides is developed via reaction of 1,5-diketones with H_2O_2, promoted by such acids as BF_3 Et_2O, H_2SO_4, p-TsOH and HBF_4. This process leads to the stereoisomeric bridged ozonides and provides a rare example of selective synthesis of ozonides without the use of ozone.

Synthesized ozonides from 1,5-diketones and H_2O_2 have high cytotoxicity *in vitro* and selectivity against HepG2, A549, PC3, and DU145 cancer cell lines, which in some cases is higher than that of paclitaxel, doxorubicin, cisplatin, artemisinin, artesunic acid.

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Biography

Dr Ivan A Yaremenko has completed his PhD in Organic Chemistry by N D Zelinsky Institute of Organic Chemistry RAS in 2013. At present he is researcher N D Zelinsky Institute of Organic Chemistry RAS. He published 21 research papers, and 11 patents.

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