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chemistry

New 5-selenocyanate-2'-deoxyuridine compound, method for obtaining it and application for sensitization of a tumor cell genome to the action of ionizing radiation

About the invention

The invention concerns a novel compound – 5-selenocyanato-2'-deoxyuridine (SeCNdU) – its synthesis method and application for sensitizing the cancer cell genome to ionizing radiation. The compound acts as a DNA radiosensitizer, enhancing the sensitivity of tumor cells to radiotherapy. Compared to the classical 5-bromo-2'-deoxyuridine (BrdU), SeCNdU shows a more favorable electron-induced degradation profile, leading to higher radiosensitizing efficiency under hypoxic conditions typical of solid tumors. The compound was synthesized under controlled cryogenic conditions, and its activity was confirmed by both computational (DFT) and experimental studies.

IP protection

The invention is protected by the Polish Patent Office under the following number: **Pat.240324**

Technology readiness level

TRL 4 - Technology validated in laboratory conditions.

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Applications

- Radiosensitizer enhancing cancer therapy effectiveness,
- Potential component of oncology drugs supporting radiotherapy,
- Research tool in molecular biology and radiation chemistry.

Possible cooperation

- Licensing or joint development projects,
- Pre-implementation studies with pharmaceutical partners,
- Collaboration in clinical application development.

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