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MEDICAL AND DIAGNOSTIC APPLICATION OF NEW NAPHTHOQUINONE DERIVATIVE

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Commercialization opportunities

- Licensing agreement
- Transfer of ownership
- Partnership for further research and commercialization

IP Status

The invention is protected by patent No. PL232283

Implementation progress

TRL 4
Technology validated in laboratory conditions

Compounds containing a quinone group are one of the most commonly used compounds in anti-cancer therapy. The interest in naphthoquinones as potential anticancer drugs results from their significant antiproliferative and anti-cancer activity demonstrated on numerous animal models and on tumour cellular lines. ERK kinases belong to the family of serine-threonine kinases activated with MAPK mitogens. ERK kinases have been shown to be substantially active in many types of human cancers, including breast cancer, and their activity may contribute to the resistance of cancer cells to chemotherapeutic agents. Therefore, selective inhibition of ERKs may become an important potential solution in the treatment of breast cancer. The proposed technology is based on use of the selective inhibition of ERK protein in the breast cancer therapy. The MAPK / ERK kinase cascade is the main pathway for cell growth and differentiation and plays a key role in signal transduction leading to cellular proliferation, tumour creation process and cancer development. The new proposed naphthoquinone derivative turned out to be an effective inhibitor of ERK protein against breast cancer cells *in vitro*. Therefore, it can be used as an ERK protein inhibitor in the cellular lines. In addition, the invention may also be applied as a cytotoxic compound used in *in vitro* studies to inhibit the growth of breast cancer cellular lines. The abovementioned applications can be implemented in preclinical studies as well as in clinical trials in order to inhibit the growth of cancerous tumours.

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