

Antibacterial mixture of juglone and silver for combating *Staphylococcus aureus*

About the solution

The invention relates to an antibacterial mixture containing juglone (5-hydroxy-1,4-naphthoquinone) and silver nanoparticles, showing synergistic bactericidal activity against *Staphylococcus aureus*, including antibiotic-resistant strains.

The composition combines two biologically active components – a natural naphthoquinone and a silver ion source in the form of 1–100 nm nanoparticles.

The mixture demonstrates high antibacterial efficacy with significantly reduced concentrations of both components compared to their individual use, confirming a synergistic effect.

The invention can be applied as an antimicrobial agent for external use, particularly for skin and wound infections caused by *S. aureus*.

IP Protection

The invention is protected by the Polish Patent Office under the following number: **Pat.244425**

Technology readiness level

TRL 4 – Technology validated in laboratory conditions.



TRL 4

Research Team

University of Gdańsk

Prof. Aleksandra Królicka

PhD Marta Krychowiak-Maśnicka

Applications

- Topical preparations for treating skin and wound infections caused by *Staphylococcus aureus*
- Antiseptic and disinfectant agents in medical and veterinary use,
- Component of wound dressings and healing-support formulations.

Cooperation opportunities

- licensing or joint development of application-ready formulations,
- Partnership with pharmaceutical and biomedical industries for product implementation,
- Collaboration in applied research on synergistic bioactive systems.