biology

Use of sodium 5,5′-indigodisulfonate to inhibit bacteriophage infections in biotechnological processes

About the solution

The invention concerns the use of indigotine (E132, sodium 5,5′-indigodisulfonate) as an effective and safe agent for inhibiting bacteriophage infections in biotechnological processes.

Research demonstrates that the active anion of 5,5′-indigodisulfonic acid directly deactivates phage virions while maintaining bacterial viability, providing reliable protection for microbial cultures in bioreactors. Indigotine can be added directly to bacterial suspensions or to process additives, is effective at low concentrations, and its activity can be enhanced by mixing or operating at 37–50°C.

The solution addresses a major challenge in biotechnology—significant production losses caused by recurrent phage contamination.

IP Protection

The invention is protected by the Polish Patent Office under the following number: **Pat.245314**

Technology readiness level

TRL 4 - Technology validated in laboratory conditions.

Research Team

University of Gdańsk
Prof. Marcin Łoś

Phage Consultants

Institute of Physical Chemistry of the Polish Academy of Sciences
PhD Student Sada Raza
Prof. Jan Paczesny
PhD Bartłomiej Bończak

Applications

- Protection of bacterial cultures in bioreactors against phage infections,
- Stabilization of biotechnological, pharmaceutical, and food production processes,
- Securing process additives (e.g., antibiotics, inducers) susceptible to phage contamination.

Cooperation opportunities

- Industrial licensing of the technology,
- Joint research on dosage optimization and fermentation process integration.,
- Pilot-scale implementation in biotechnology and pharmaceutical facilities.

biuro@ctt.ug.edu.pl
ul. Wita Stwosza 63,
80-308 Gdańsk
www.ctt.ug.edu.pl

Judyta Gawryś
+48 725 991 257