

Country	Hungary	Area	Treatment
Founding year	2017	Patents	N/A
Research institution	Eszterházy Károly University	In the field of	Pseudomonas aeruginosa infections
Relationship	Completely separated		

## Background and description

Antibiotic-resistant super bacteria cause nearly 700,000 deaths every year. By 2050, it will reach 10 million according to the CDC. Pseudomonas aeruginosa is one of the most common and often fatal nosocomial bacteria and the most prevalent (60%) in the cystic fibrosis lung.

MDPA infections prevail, if one of the following conditions are present: receiving chemotherapy, CF, HIV/AIDS, undergoing an invasive procedure or burn wounds. Current antibiotics are unsuccessful in inhibiting its growth. Disruption of the finely tuned and stable bacterial flora by antibiotics has profound effects on the protective barrier.

## Technology

The Kirby-Bauer test was carried out (antimicrobial efficacy) against pathogenic bacteria, (P. aeruginosa included). Gut microbe testing: L. acidophyllus, B. longum and E.coli, E. faecalis - CFU Colony Forming Unit. The quantitative identification of the compound groups was performed on 1200 Agilent LC-MS; samples were fractioned on preparative LC.

## Experimental Results

The innovative solution extracted from L. barbarum exhibited a significant inhibition against P. aeruginosa compared to the control antibiotic (diameter: 26 mm-18 mm), but encouraged the growth of commensal bacteria: 100x in CFU. The analytical mapping of the major antimicrobial complex groups was carried out. One of the fractions was synergistically enhanced when combined with other fractions.

## Application

These results demonstrate a novel extraction way of plant-based compounds and their effectiveness in the treatment of P. aeruginosa infections, that affect millions of cancer patients. Along with the nine identified innovations in the project, antibiotics which lost effectiveness over time might be revived.

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