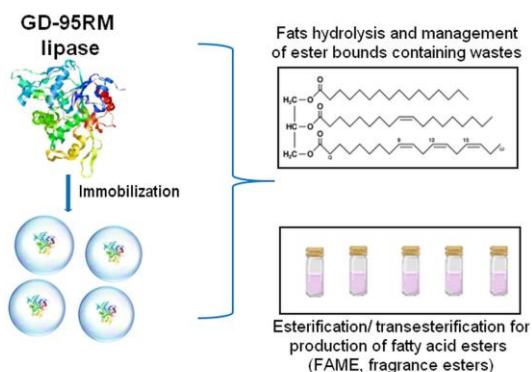


New engineered *Geobacillus* lipase GD-95RM for Industry

BRIEF DESCRIPTION OF A TECHNOLOGY

GD-95RM lipase is new microbial lipolytic biocatalyst evolved through protein engineering, using directed evolution. This lipolytic biocatalyst is successfully produced by heterologous protein expression in *E. coli* BL21 (DE3) and purified by using native IMAC conditions. It has been reported that GD-95RM lipase successfully performed hydrolysis of different commercially available oils and fats at a broad temperature range (20-75 °C) with preference to higher temperatures, displayed activity at alkaline pH and are compatible with organic solvents (ethanol or methanol). GD-95RM lipase is also compatible with compounds potentially involved in detergent production (trisodium citrate, sodium perborate, urea, boric acid or citric acid). Long term storage up to 3 months at room temperature of native and immobilized forms of GD-95RM is also possible.



PURPOSE

Both native and immobilized forms of GD-95RM enzyme can be applied for hydrolysis and transesterification reactions of different oils and fats. The immobilized form of target enzymes is applicable in flow systems. The GD-95RM lipolytic biocatalyst can be a promising new tool for:

- Removal of lipid pollutants;
- Fat, oil, and grease (FOG) waste management;
- New detergent production;
- FAME (fatty acid methyl esters/ biofuel) and fragrance fatty acid ester production;
- Can be used as model enzymes in protein research.

TECHNOLOGY READINESS LEVEL

Validated in laboratory.

INVENTORS

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PUBLICATIONS

Druteika G, Sadauskas M, Malunavicius V, Lastauskiene E, Statkeviciute R, Savickaite A, Gudiukaite R. New engineered *Geobacillus* lipase GD-95RM for industry focusing on the cleaner production of fatty esters and household washing product formulations. *World Journal of Microbiology and Biotechnology*. 2020, 36, 41. DOI: 10.1007/s11274-020-02816-3



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APPLICATION

- Tools for fundamental enzyme research and development of further protein engineering methods
- Application in various fields of Biotechnology
- Production of new, eco-friendly detergents
- Improvements in cleaning technology

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