

A new bioremediation method for removal of wastewater containing oils with high oleic acid composition: *Acinetobacter haemolyticus* lipase immobilized on eggshell membrane with improved stabilities

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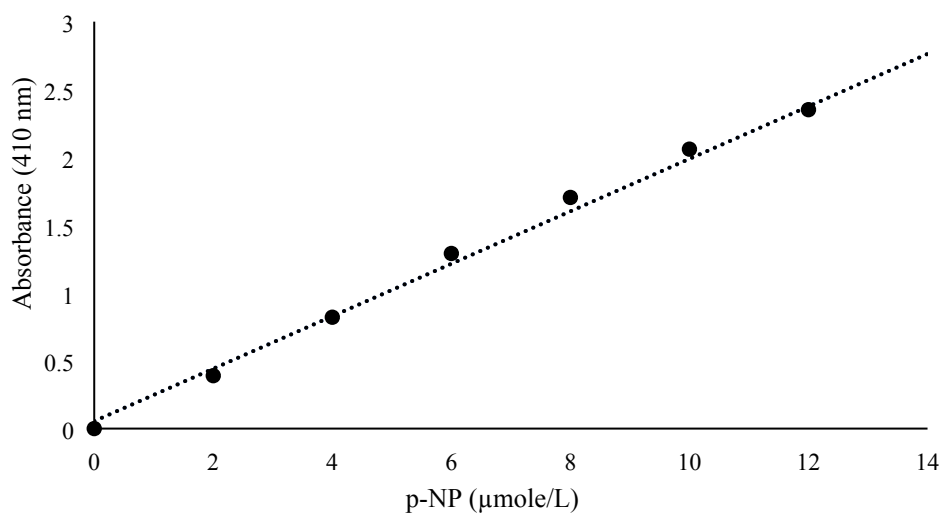


Fig. S1 Standart curve of *p*-NP.

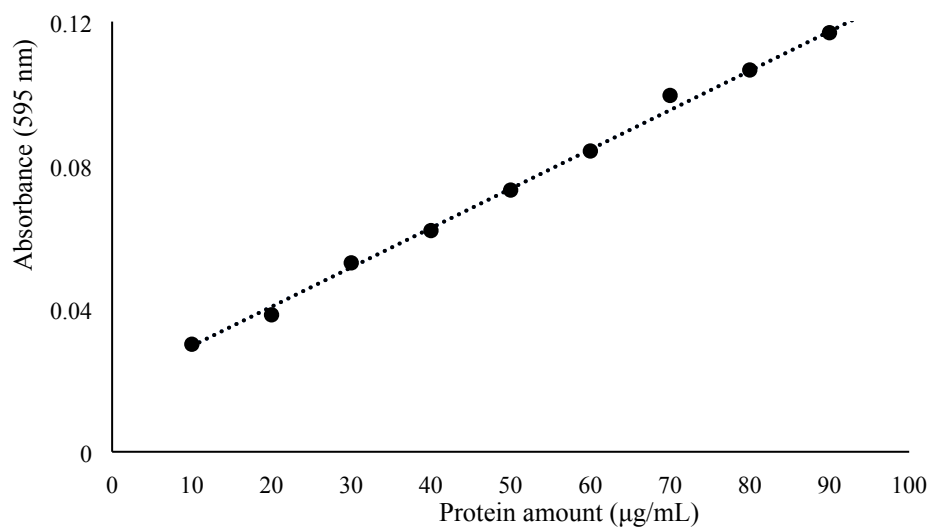


Fig. S2 Standart curve of protein amount.

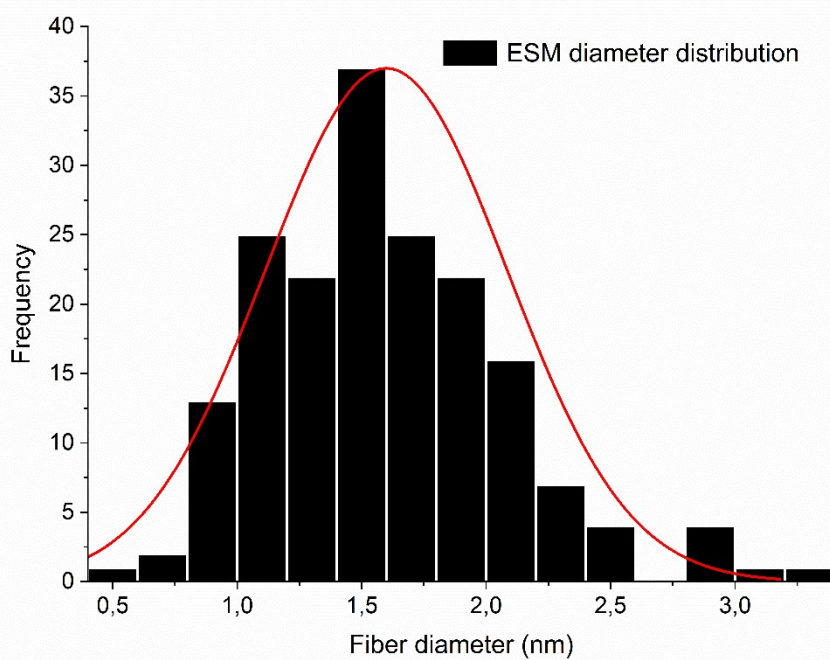


Fig. S3 Size distribution of ESM.

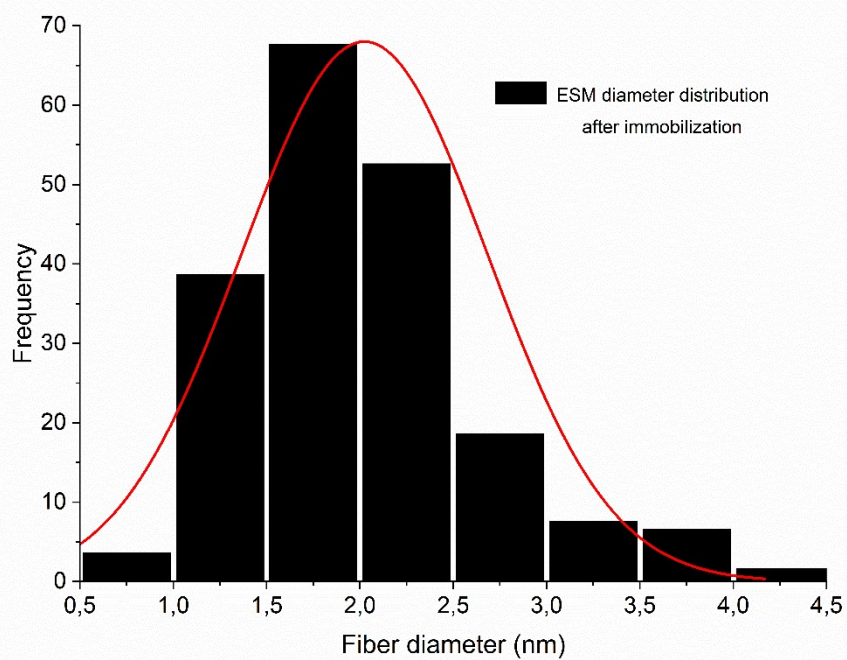


Fig. S4 Size distribution of ESM after lipase immobilization.

Table S1 Reusabilities comparison between similar studies.

Carrier	Enzyme	Reuse Number	Reference
ESM	<i>Burkholderia cepacia</i> lipase	5	55
Oxidized ESM	<i>Burkholderia cepacia</i> lipase	10	55
ESM	Pancreatic lipase	15-16	57
ESM	<i>Burkholderia cepacia</i> lipase	8	59
ESM	α -amylase	10	56
Cu ₃ (PO ₄) ₂ nanoflowers	<i>Pseudomonas cepacia</i> lipase	6	74
UiO-66/PVDF membrane	<i>Aspergillus oryzae</i> lipase	7	62
ESM	<i>A. haemolyticus</i> lipase	19	Present study

Table S2 The fatty acid compositions of corn, olive, soybean and sunflower oil.^{72, 73}

Edible oils	Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Linoleic (18:2)	Linolenic (18:3)
Corn oil	10.6	2.0	26.7	59.8	0.9
Olive oil	14	2	64	16	2
Soybean oil	6	5.2	20.2	63.7	5
Sunflower oil	6.1	5.3	21.4	66.4	-