

Response surface optimization of the culture medium for production of elastin-like polymers by *Escherichia coli*

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Elastin-Like Polymers (ELP's), a family of proteins based on repetitive pentapeptide sequences known by their smart and extremely biocompatible behaviour^{1,2}, are of great interest to our research group. Ongoing work using *E. coli* as the expression system, strongly suggests that the biomass and polymer production are closely related. The Response Surface Methodology (RSM) is a collection of mathematical and statistical techniques useful for the modeling and analysis of problems, in which a response of interest is influenced by several variables and the main objective is to optimize this response, in a suitable set of experiments³. The referred strategy was employed in order to improve the production of both, biomass and ELP's, in an auto induction medium previously designed by us (adapted from Terrific Broth and Phosphate Buffer Glycerol). The nutrients yeast extract, lactose and glycerol were the factors subjected to this statistical treatment. Knowing that glycerol and lactose are, respectively, sub-products of biodiesel production and dairy industry the use of these compounds is highly favorable for the design of a sustainable scale-up procedure. On the other hand, yeast extract was selected in order to maximize the final yield due to its described importance in the boost of production. The validation of the model obtained was achieved and allowed the optimization of biomass levels.

Acknowledgements: This work was supported by ElastM POCI/CTM/57177/2004, supported by FEDER and the FCT

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