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## EFFECT OF NICKEL CONTAMINATION ON THE GROWTH OF OLEAGINOUS YEASTS IN HYDROLISATES OF *Arundo donax*

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### Abstract

Hydrolisates of *Arundo donax*, a crop offering high productivity in contaminated or salinized soils with no inputs of irrigation and agrochemicals, were used in a discontinuous fermenter to grow the oleaginous yeast *Lipomyces starkey*, to obtain microbial oils potentially useful for the production of 2<sup>nd</sup>-generation biodiesel.

A mixture of fermentable sugars was obtained by steam-explosion and subsequent enzymatic hydrolysis of the lignocellulosic materials. The concentration of Ni<sup>2+</sup> ions and of inhibitors of the microbial growth significantly affected both the biomass and the triglyceride yields. The microbial lipids produced were compatible with the synthesis of an automotive-grade biodiesel.

A physico-mathematical model, developed to describe the biomass growth, demonstrated that the concentration of heavy metals affected the maximum biomass concentration, though its influence on the specific growth rate of the yeasts was not significant.

*Key words:* *Arundo donax*, heavy metals, microbial oils, oleaginous yeasts.

*Received:* December, 2014; *Revised final:* June, 2015; *Accepted:* June, 2015

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