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Olive Oil Wastewater (OMW) management enriched with lignocellulosic sugars through microbial fermentation

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The aim of the present study is to investigate the capability of two microorganisms *Cryptococcus curvatus* and *Lipomyces starkeyi* to produce biomass and metabolic compounds such as lipids during their growth on media containing raw xylose as the sole carbon source or in blends with diluted olive mill wastewater (OMW). Especially for the yeast *Cryptococcus curvatus* cultures were carried out with media containing raw lactose as the sole carbon source or in blends with diluted OMW. Cultures were performed in media favoring the production of intracellular lipids and biomass under initial xylose concentration of 100 g/L. At the first experiments media was containing as carbon source only xylose or lactose. Subsequently experiments were performed with media constituted by either carbon source xylose or lactose and a concentration of OMW depending on the total phenols. For *Cryptococcus curvatus* the total phenols range was between 1-2 g/L and for *Lipomyces starkeyi* was between 1-2, 35 g/L. Moreover cultures were carried out only for the yeast *Cryptococcus curvatus* with media containing raw lactose under initial concentration of 160 g/L. All microorganisms consumed xylose and lactose with an almost linear way regardless the initial substrate concentration implemented and the total phenols indicating absence of substrate inhibition phenomena. The only exception occurred with the culture of the yeast *Cryptococcus curvatus* in media with carbon source concentration of 160 g/L. The stabilization of the consumption of the carbon source in late hours of the culture soon was overrun and the linear consumption took place again. The yeast *Cryptococcus curvatus* accumulated some satisfactory amounts of intracellular lipids when culture purged an amount of OMW yielding 7.36 g/L of oil with a carbon source of xylose and 11.8 g/L with a carbon source of lactose. The yeast *Lipomyces starkeyi* accumulated smaller amount of intracellular lipids yielding 6.82 g/L when media contained 25% OMW. Lactose and xylose proved to be a suitable substrate for biomass accumulation for the two yeasts with an average of 20 g/L. Moreover for the two yeasts measurements were carried out in order to investigate phenolic compound reduction and decolorization of medium. Both yeasts reduced PCC. Only *Cryptococcus curvatus* was able to decolorize the medium. Finally, further analysis of the intracellular lipid revealed that the major compounds of the oil (70-80%) were the oleic and the palmitic acid.

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Analysis of the nutritional status of children aged 0 to 10 years in Saudi Arabia

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Malnutrition, Anaemia, Obesity and Oral health seem to be major health issues in Saudi children, but more data is needed to validate this statement. Malnutrition is still prevalent. In Riyadh, in 1999, 4.5% of children were underweight, 6.1% were wasted and 8.8% were stunted (13). However, the prevalence of malnutrition has decreased since 1993. No precise national data has been identified but 2 regional studies indicate an anaemia prevalence of around 10-11%. A 2000 review on the nutritional status of the Saudi population concludes that anaemia is a major health problem in Saudi Arabia. Obesity is becoming a major health disorder in Saudi children: ~10% of children less than 6 years old were obese in 1998 (45, 46). This has consequences for the health of children with higher risks of diabetes, cardiovascular diseases and hyperlipidemia. Oral health is a major health disorder in Saudi Arabia among young children due to bad oral hygiene and dietary habits such as drinking soft drinks. Diarrhoea, intestinal parasitic infections and gastritis are important health disorders in Saudi children example the prevalence of intestinal parasites is 34.4% in Riyadh (35).

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