

Optimization of cultivations of carotenogenic yeasts on poultry waste substrates

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Carotenogenic yeast are well known for high lipids, carotenoids, or glucans production in their biomass which can be further used in pharmaceutical, food and feed industry. Due to the high lipid content in dry biomass, they are also called oleaginous. Their ability to process waste materials and different carbon sources from various industries, such as agricultural industry, gives the possibility to use them for waste material treatment. This waste treatment process then could be used as a part of circular economy cycle. This research is focused on optimization of cultivation process in Erlenmeyer flasks and in controlled conditions of bioreactor by changing cultivation conditions and media composition as well. Research is focused on carotenogenic yeasts, especially the genus *Rhodospiridium*, which have achieved significant results in the production of carotenoids and lipids with interesting biomass growth (above 20 g/l). The optimization process is focused predominantly on mineral media with addition of animal by-products, namely poultry waste feathers and fat. Hydrolysed feathers play a major role as nitrogen source and waste fat serves as carbon source. After the completion of this process, further investigation will be carried on production of lipids and pigments on combined animal/plant waste substrates.

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