Enhanced Rhodotorula sp. carotenoids production by natural antioxidants

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Carotenoids are substances with very special and remarkable properties that no other groups of substances possess and that form the basis of their many, varied functions and actions in all kinds of living organisms. Often traditionally thought of as plant pigments, the carotenoids have a much wider distribution and occur extensively also in animals and microorganisms. Carotenoid biosynthesis is a specific feature of the Rhodotorula species, Rhodosporidium and Phaffia genera.
The recovery of high added-value products from waste plant material has been an important issue with economic relevance for the pharmaceutical and food industries. Based on utilizations of natural antioxidants like polyphenolic compounds, it should be noted that there is very little information on the interaction between yeasts and polyphenols, although some researchers accept the fact that yeasts plays a direct part in the breakdown of these substances and recent studies sustain the existence of an inhibitory effect on carotenoids microbial biosynthesis.
Response of both strains to natural antioxidants was different and the level of the polyphenolic compounds show that it is possible to use them partially as a carbon energy source by the yeasts, as shown by the evolution of both mass quantity and yeast dry substance. Glucose was utilized at a higher rate in the case of antioxidants added and the total carotenoids produced by yeasts in the case of incubation with different initial concentrations of vegetal extract were higher with 66%.