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THE USE OF DIFFERENT COMPOUNDS AS STIMULATORS FOR ASTAXANTHIN PRODUCTION

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Abstract. Astaxanthin is an important ketocarotenoid with remarkable biological activities and high economic value. In recent times, natural astaxanthin production by microorganisms has attracted much attention particularly in pharmaceuticals, nutraceuticals, cosmetics as well as food and feed industries. Though, currently, productivity is still low and has restricted scale-up application in the commercial market, microbial production of astaxanthin has enormous prospects as it is a greener alternative to the predominating chemical synthesis. With several advantages including high attainable biomass, high growth rate, easy cultivation and ability to utilize different carbon substrates, the yeast *Phaffia rhodozyma* is one of the most promising microbial sources astaxanthin for the commercial market.[1] Amid the various efforts in strain improvement and optimization of culture conditions suggested by many studies, the use of chemical stimulators have also been proposed to enhance of microbial cell growth and astaxanthin production. Prior studies have demonstrated increased astaxanthin production in *P. rhodozyma* with TiO_2, H_2O_2, n-hexadecane as well as crude extracts from other organisms like plant and fungi.[2,3] More recently, 6-benzylaminopurine, a phytohormone have been shown to biomass production and astaxanthin synthesis in *P. rhodozyma* by 21.98% and 24.20% respectively. Moreover, various phytohormones (e.g. salicylic acid, methyl jasmonate etc.) have been reported to positively affect growth and synthesis of different substances by microalgae.[4] This work thus reviews the use of chemical stimulators to improve astaxanthin production with special emphasis on the possible use of phytohormones to improve astaxanthin production in *P. rhodozyma* given the fact that *P. rhodozyma* was first isolated from trees.

References

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