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Influens of the protein microenvironment on the spectral properties of prodigiosin

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Abstract

The linear tripyrrole prodigiosin is produced by *Serratia marcescens* and give character red colouring to culture. Prodigiosin is dissolved in polar and non-polar organic solvent and is water-insoluble but transfer to water fase as protein-pigment complex by biomass treatment with detergents (SDS and Triton X-100). There are two spectral form of prodigiosin accoding to pH: red with maximal absorbance at 535 nm and yellow with maximal absorbance at 460-470 nm. Growing *S.marcescens* accumulate both pigment forms. Absorbance curve of cellular suspension covers absorbance area of both pigment forms and this is the new absorbance peak at 500 nm. The absorption curve of native pigment-protein complex coincides with that of intact pigmented cells. Absorption at 500 nanometers is characteristic for prodigiosin associated with native protein and denote that pigment-protein relations is similar to that into bacterial cells. Effect of denaturated agents leads to disappearance of this maximum at absorbance spectrum of prodigiosine-pigment complex. Both prodigiosin forms fluoresce at 560-580 nanometers (depending on concentration), both as ethanol solutione and as pigment-protein complex. *In vitro* disruption of a pigment – proteine interaction leads to prodigiosin absorption increase and fluorescence decrease. In cellular suspension fluorescence of the red form of a pigment (E_{535}) is more expressed and fluorescence of yellow ($E_{460-470}$) and novel, E_{500}, are smaller. There is the fact that may point out functional differences of this prodigiosine forms at *S.marcescens* methabolism.