

P004 Application of oxygenases from *A. radioresistens* S13 for indigo and indirubin production.

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Acinetobacter radioresistens S13, a strain we isolated from activated sludge plants, expresses two specific oxygenases for growth on either phenol or benzoate as the sole carbon source. Both phenol hydroxylase (PH) and benzoate dioxygenase (BD) fall in the classes of oxygenases potentially able to convert indole to indigoid compounds.

We demonstrated that only PH is able to catalyse the conversion of indole to indigo and indirubin, two indigoids of paramount importance for dyes industry and pharmaceutical companies respectively.

The percentage of conversion of indole, in small scale liquid cultures grown in mineral medium (SH) supplied with phenol, was of 7.95 % for indigo and 1.14% for indirubin, up to respectively 16 times and 6 times higher than what reported for *Pseudomonas* ST-200, with an average productivity in *A.radioresistens* S13 of 20 mg/l for indigo and 3 mg/l for indirubin. On SH-phenol-indole-agar plates the indirubin production is increased up to 57.7 mg/l with a 4.4% of conversion, 22 times higher than yields reported in literature.

This study stressed the potentiality of *A.radioresistens* S13 as biocatalyst for industrial application. Further studies are underway to express the PH system in *E.coli*, for conversion of endogenous indole generated from tryptophan.