

ADDITION OF INORGANIC COMPOUNDS TO INCREASE LACCASE ENZYME ACTIVITY

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RESUMO

Introduction: Fungal laccases have shown great potential in industrial and environmental applications. Therefore, further study of the properties of the laccase enzyme and its behavior with the addition of different compounds is essential to address the potential applications of this enzyme to specific fields. **Objective:** Evaluate the ability of different inorganic compounds to increase the activity of fungal laccases.

Materials and methods: To study the effects of different compounds on the activity of laccase recombinant, we work with a laccase from *Phlebia brevispora* heterologously expressed. The effects of Iron chloride, Copper sulphate, Calcium carbonate, Zinc chloride, Potassium chloride and Ammonium sulfate on the activity of laccase were determined. Solution of 0.5mmol L⁻¹ of each compound were tested and the residual enzymatic activity were measured and compared with control (without compound). Later, the solution which causes the highest laccase activity, was used in concentrations from 0,5 mmol L⁻¹ to 3 mmol L⁻¹ to quantify the residual activity. **Results:** In the production of recombinant laccases assayed on flask, Iron sulfate 1 mmol L⁻¹ showed the highest enzymatic activity with an activity peak of 613.00 EU (μmol min⁻¹ mL⁻¹) at the fourth day of incubation. The other compounds assayed showed the following activity peaks: Iron chloride 373.02 UL⁻¹, Calcium carbonate 256.3 UL⁻¹, Zinc chloride 47.10 UL⁻¹, Potassium chloride 87.09 UL⁻¹, Ammonium sulfate 101.03 UL⁻¹. **Conclusion:** Based on the results of this work, we conclude that the laccase enzyme supplemented with Iron sulfate offers promising results for the application of white-rot fungal resources in environmental remediation, bakery industry, bioremediation, biodegradation and so forth.

PALAVRAS-CHAVE: laccase, induction, inorganic compounds

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