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Effect of 2-(2'-hydroxy-3'-methoxy phenyl)-4-Bromo-6-Methyl Benzothiazolyl Hydrazones Metal Complexes on Fermentation Reaction

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ABSTRACT

The literature survey indicates that macrocyclic heterocyclic compounds affects microbial action of yeast in the fermentation process not only such heterocyclic compounds interacts on the yeast fermentation but also their some 'd' block metal ion complexes also alters the rate of fermentation process by *Sacchromyces cereviseae* yeast.

This paper contains the work of macrocycyclic heterocyclic compound 2-(2'-hydroxy-3' -methoxy phenyl)-4-bromo-6-methyl benzothiazolyl hydrazones (HNPBMB) and Cr^{+3}, Mn^{+2}, Fe^{+3},Co^{+2},Ni^{+2},Cu^{+2} metal ion complexes.

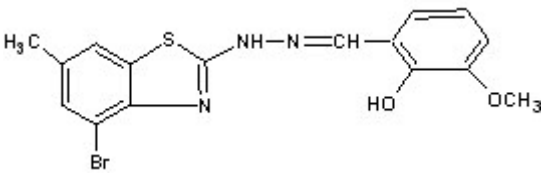
Key word: Synthesis of macrocyclic compound and their metal complexes and their effects on fermentation.

INTRODUCTION

In the fermentation process sugars are converted into simple organic compounds like alcohol by the action of microorganism like *Saccharomyces cervisiae* . This research paper indicates the comparative action of 2-(2'-hydroxy-3'-methoxy phenyl)-4-bromo-6-methyl benzothiazolyl hydrazones and their metal complexes On the fermentation process.

MATERIAL AND METHODS

The yeast used in the study was saccharomyces cerevisiae which is obtained from the bakery. This culture is directly used for fermentation process.



Structure of Ligand

Sugarcane juice were used for fermentation process , eight labeled , presteriel conical flask were used as container to study the fermentation. In each conical flasks 1 ml. sugarcane juice were added and 20 ml. distilled water were added and addition to this each conical flask 0.5gm ammonium phosphate, ammonium sulphate,

magnesium sulphate is added. pH of the solution is adjusted upto 5.5. In each flask 0.5 gm dry east were added. In conical flask no. 1 used as control and in conical flask no. 2 contain 0.1 gm 2-(2'-hydroxy-3'-methoxy phenyl)-4-bromo-6-methyl benzothiazolyl hydrazones and in conical flask no. 3,4,5,6,7 and 8., Cr^{+3}, Mn^{+2}, Fe^{+3},Co^{+2},Ni^{+2},Cu^{+2} metal ion complexes with 2-(2'-hydroxy-3'-methoxy phenyl) -4-bromo-6-methyl benzothiazolyl hydrazones were added respectively and mouth of conical flask were covered by cotton and plastic. The fermentation process were continued till 8 hours. After it the percentage of alcohol and dry matter of yeast biomass was determined.

Analysis

After 8h the content of conical flask were filtered the biomass was separated and this biomass is dried at 105°C and its weights were recorded.

Flask No.	Compound added	Wt of dry biomass
1	control	0.80
2	(HNPBMB)	0.92
3	Cr^{+3} Complex	1.21
4	Mn^{+2} Complex	0.95
5	Fe^{+3} Complex	0.98
6	$C0^{+2}$ Complex	0.94
7	Ni^{+2} Complex	0.96
8	Cu^{+2} Complex	1.20

Study also indicate that Mn^{+2} and Co^{+2} complexes with metal ion are acting as in similar way their action is more than control but less than ligand and remaining metal ion complexes.

CONCLUSION

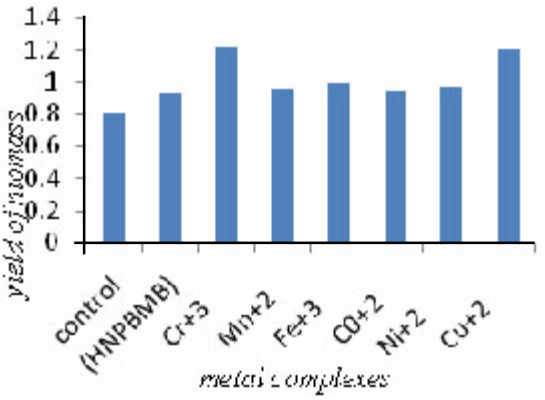
On the basis of experimental results it indicates that the macrocyclic 2-(2'-hydroxy-3'-methoxy phenyl)-4-bromo-6-methyl benzothiazolyl hydrazones is also enhances the fermentation by Saccharomyces cerevisiae and metal ion complexes

RESULTS AND DISCUSSION

The results indicate that the biomass in conical flask no.2 is more as compared to control. It means that the nitrogen containing ligand 2-(2'-hydroxy-3'-methoxy phenyl)-4-bromo-6-methyl benzothiazolyl hydrazones enhances the fermentation process. It is also found that each metal ion complex that are Cr^{+3}, Mn^{+2}, Fe^{+3},Co^{+2},Ni^{+2},Cu^{+2} enhances the rate of fermentation as compared to control.

Results also indicate that Cr^{+3} metal ion complex and Cu^{+2} metal ion complex are acting as accelerator in the fermentation process as compared to remaining metal ion complexes like Mn^{+2}, Fe^{+3}, Co^{+2} metal ion complexes.

It is practically proved that the fermentation reaction is near about same in case of Fe^{+3} and Ni^{+2} metal ion complexes.



of Cr^{+3}, Cu^{+2} and Fe^{+3} more accelerates the fermentation process but the action of Mn^{+2}, Co^{+2} ,Ni^{+2} metal ion complexes in the fermentation is less. observation table.

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