

## ***CHAPTER – II***

## CHAPTER II

### SELECTION OF THE MEDIUM FOR THE MAINTENANCE OF THE RESISTANT *Saccharomyces cerevisiae*A100

It is obvious that the  $Hg^{++}$  resistant strain *Saccharomyces cerevisiae*A100 is to be grown and subcultured in a definite medium so that its biosorption efficiency remains fixed. In the present study, we observed that,  $Hg^{++}$  resistant strain *Saccharomyces cerevisiae*A100, isolated from 35ppm  $Hg^{++}$  containing medium, degenerated and showed decreasing  $Hg^{++}$  biosorption efficiency from  $Hg^{++}$  containing medium when grown in YPD agar slant and subcultured in the same medium for 6 months. Thus, for the better maintenance of *Saccharomyces cerevisiae*A100, the following four media were tested for their suitability. Their compositions are given below:

#### Medium I

Peptone – 0.5%  
Yeast Extract – 0.5%  
Beef Extract – 0.5%  
Agar – 4%  
pH – 5.0

#### Medium III

Dextrose – 1%  
(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> – 0.5%  
KH<sub>2</sub>PO<sub>4</sub> – 0.1%  
MgSO<sub>4</sub>·7H<sub>2</sub>O – 0.025%  
FeSO<sub>4</sub>·7H<sub>2</sub>O – 0.002%  
Biotin – 0.5µg/ml  
pH – 5.0

#### Medium II

Dextrose - 1%  
Yeast Extract – 0.5%  
Peptone – 0.5%  
Agar – 4%  
pH – 5.0

#### Medium IV

Dextrose – 2%  
MgSO<sub>4</sub>·7H<sub>2</sub>O – 0.07%  
NaCl – 0.05%  
(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> – 0.37%  
KH<sub>2</sub>PO<sub>4</sub> – 0.1%  
K<sub>2</sub>HPO<sub>4</sub> – 0.13%  
pH – 5.0

When the Hg<sup>++</sup> resistant *Saccharomyces cerevisiae*A100 was maintained in those four different media separately and then biosorption were carried out using the previously mentioned biosorption medium and conditions (described in Chapter 1), we got the following results as depicted in Table 2.

**TABLE 2: Hg<sup>++</sup> RESISTANT *S. cerevisiae*A100 MAINTAINED IN DIFFERENT MEDIUM**

Maintenance medium	Biosorption (%) of Hg <sup>++</sup> from 30ppm Hg <sup>++</sup> containing medium after						
	Initial	1 month	2 month	3 month	4 month	5 month	6 month
I	46.6±0.32	42.2±0.52	38.1±0.53	24.4±0.48	16.6±0.42	10.2±0.48	9.2±0.39
II	47.2±0.41	44.3±0.41	39.7±0.55	26.2±0.43	18.4±0.45	11.7±0.55	10.1±0.64
III	52.3±0.36	52.3±0.36	52.3±0.49	52.3±0.63	52.3±0.58	52.3±0.46	52.3±0.56
IV	40.1±0.45	36.2 ±0.44	30.6±0.39	28.6±0.50	25.3±0.66	21.2±0.46	16.7±0.62

Biosorption Values are expressed as mean ± Standard Deviation

All values of cell growth and biosorption are biologically significant (p< 0.001).

Table.2. shows that the Hg<sup>++</sup> resistant (35ppm) *Saccharomyces cerevisiae*A100 subcultured from medium III for 6 month is relatively stable with respect to biosorption of Hg<sup>++</sup> in medium containing 30ppm Hg<sup>++</sup>.So medium III was finally selected for the maintenance of the Hg<sup>++</sup> resistant (35ppm) strain of *Saccharomyces cerevisiae*A100 .