APPENDIX I

MATLAB program for simulation of experiments on xanthan yield from *Enterobacter oryzae* by batch fermentation using glucose as carbon source

1- clc
2- clf
3- clear
4- global k b alp blp yxs s0
5- k = 0.08365;
6- b = 1/7.3;
7- alp = 2.7;
8- blp = 0.00045;
9- yxs = 0.184;
10- s0 = 40;
11- tspan=[0:24:120];
12- c0=[40 0.2 0];
13- [t,c]=ode45('selvif',tspan,c0)
14- plot(t,c(:,1),'+',t,c(:,2),'*',t,c(:,3))
15- legend ('s','x','P')
16- xlabel('Time (day)')
17- ylabel('Concentration (g/l)')
MATLAB program for simulation of experiments on xanthan yield from

*Enterobactor oryzae* by batch fermentation using sugarcane bagasse
hydrolysate as carbon source

1- clc
2- clf
3- clear
4- global k b alp blp yxs s0
5- k = 0.08372;
6- b = 1/7;
7- alp = 3.1;
8- blp = 0.0009;
9- yxs = 0.178;
10- s0 = 40;
11- tspan=[0:24:120];
12- c0=[40 0.2 0];
13- [t,c]=ode45('selvif',tspan,c0)
14- plot(t,c(:,1),'+',t,c(:,2),'*',t,c(:,3))
15- legend ('s','x','P')
16- xlabel('Time (day)')
17- ylabel('Concentration (g/l)')
APPENDIX III

MATLAB program for simulation of experiments on xanthan yield from
Enterobacter oryzae by batch fermentation using wheat bran
hydrolysate as carbon source

1- clc
2- clf
3- clear
4- global k b alp blp yxs s0
5- k = 0.07708;
6- b = 1/7.5;
7- alp = 3.33;
8- blp = 0.00084;
9- yxs = 0.184;
10- s0 = 40;
11- tspan=[0:24:120];
12- c0=[40 0.3 0];
13- [t,c]=ode45('selvif',tspan,c0)
14- plot(t,c(:,1),'+',t,c(:,2),'*',t,c(:,3))
15- legend ('s','x','P')
16- xlabel('Time (day)'
17- ylabel('Concentration (g/l)')
MATLAB program for simulation of experiments on xanthan yield from Enterobacter oryzae by batch fermentation using rice bran hydrolysate as carbon source

1- clc
2- clf
3- clear
4- global k b alp blp yxs s0
5- k = 0.08365;
6- b = 1/7.3;
7- alp = 3.28;
8- blp = 0.0005;
9- yxs = 0.184;
10- s0 = 40;
11- tspan=[0:24:120];
12- c0=[40 0.2 0];
13- [t,c]=ode45('selvif',tspan,c0)
14- plot(t,c(:,1),'+',t,c(:,2),'*',t,c(:,3))
15- legend ('s','x','P')
16- xlabel('Time (day)')
17- ylabel('Concentration (g/l)')
MATLAB program for simulation of experiments on xanthan yield from

*Enterobacter oryzae* by batch fermentation using sugarcane molasses as

carbon source

1- clc
2- clf
3- clear
4- global k b alp blp yxs s0
5- k = 0.08422;
6- b = 1/7.5;
7- alp = 3.52;
8- blp = 0.00028;
9- yxs = 0.188;
10- s0 = 40;
11- tspan=[0:24:120];
12- c0=[40 0.2 0];
13- [t,c]=ode45('selvif',tspan,c0)
14- plot(t,c(:,1),'+',t,c(:,2),'*',t,c(:,3))
15- legend ('s','x','P')
16- xlabel('Time (day)')
17- ylabel('Concentration (g/l)')
Differential equation used to simulate the experimental data on xanthan yield through MATLAB

```matlab
function dcdt=selvi(t,c)
% c(1)=s, c(2)=x, c(3)=p
global k b alp blp yxs D s0
dcdt=[(D*(s0-c(1)))-(k*c(2)*((1-(b*c(2))))/yxs); -
      D*c(2)+(k*c(2)*((1-(b*c(2)))));-(D*c(3))+(alp*(k*c(2)*(1-
      (b*c(2)))));+blp*c(2))]
```