CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The foam fractionation for biosurfactant recovery from water was investigated in a batch system. The effects of several important parameters such as effect of the air flow rate, column height, pore size of sinter glass disk, the solution volume and collecting time were investigated to determine the optimum condition for highest removal efficiency of biosurfactants. For comparison, the fraction of biosurfactant between foam fractionation technique and conventional method were compare by from HPLC-ELSD method.

The separation efficiencies are presented in terms of the %biosurfactant recovery and the enrichment ratio. From the results of this study, it can be concluded that:

1. A decrease in the air flow rate results in an increase in the enrichment ratio, but decrease in the percentage of biosurfactant recovery, wetness of foam and the percentage of oil removal

2. A greater column height produces a higher enrichment ratio and a no significant change in the percentage of biosurfactant recovery rate, moreover decreasing in wetness of foam and the percentage of oil removal

3. An increase in the pore size of the sinter glass disk results in an increase in the enrichment ratio, but a decrease in the percentage of biosurfactant recovery rate, wetness of foam and the percentage of oil removal

4. A lower solution volume results in a decrease in the percentage of biosurfactant recovery and wetness but a no significant change in the enrichment ratio

5. When increased the collecting time results in an increase in the percentage of oil removal and no significant change in the enrichment ratio

6. The HPLC patterns of crude biosurfactant, the initial biosurfactant solution and the collapsed foam biosurfactant are identical, and fraction C is the predominant component in those biosurfactant. Moreover, the peak intensities of the collapsed foam biosurfactant were higher than those of the initial biosurfactant solution, indicating the higher biosurfactant concentration when separated by foam fractionation technique

7. The greatest average diameter of bubble was achieved at the top of the column and the lowest average diameter of bubble was obtained in the biosurfactant solution, therefore this result is consistent with the effect of foam height on the enrichment ratio and the percentage of biosurfactant recovery.

5.2 Recommendations

The other type of biosurfactant such the other type of surfactin or emulsan biourfactants are recommended for further study in order to compare the effect of the operational parameter in biosurfactant recovery by a foam fractionation column.