

CHAPTER IV

CONCLUSION AND RECOMMENDATION

Conclusion

1. Many yeast strains in Thailand are high temperature tolerant and they also show killing ability at high temperature.

2. Wild yeasts from the natural sources of food are classified according to killing ability into three phenotypes; killer, sensitive and neutral.

3. The selected killer yeasts in this investigation were Saccharomyces cerevisiae and Hansenula saturnus. But the desirable yeasts in winemaking should belong to Saccharomyces species, not Hansenula, because the latter has undesirable characteristics for wine productions, i.e. film-forming.

4. The characteristics of the best selected killer yeast strain No.266 are listed.

4.1 This yeast was able to grow and kill the sensitive strain at 40 C, the temperature at which most of wild type killers show almost no killing ability.

4.2 This yeast was able to kill many strains of wild yeasts, such as film-forming yeast or pseudo-film-forming yeast etc., which can be contaminated in winemaking during fermentation period. By using this strain as starter can reduce problem of contamination during fermentation process.

4.3 This yeast was able to kill all killer type strains tested (K-1, K-3, K-9, K-10, K-11), except K-2. This result shows

that it may be a new type killer strain.

4.4 Its toxin activity was stable in the range of pH 3.8-7.6 with optimum pH at 6.0-6.4. Its pH range are wider than other killer strains mentioned in literature.

4.5 This killer toxin was not cured either by temperature treatment or low concentration of cycloheximide. This result supports that it may be a new type killer strain.

4.6 This yeast contained two species of ds RNA with molecular weight the same as *Saccharomyces* killer type strains which confirmed that it was a *Saccharomyces* killer.

It is possible that this killer strain might be superkiller and it was able to be the best killer strain for improving wine characteristics of a yeast.

5. The genetic markers which were necessary for experimental matings, were able to introduce into the parental strain by mutagenic procedure.

6. Single-spore colonies from selected killer parental strain could sporulate, thus this strain was a homothallic. The genetic method used in this investigation was spore-to-cell mating, which genetic manipulation of homothallic strain was more difficult than heterothallic one. From this point of view it should be recommended to construct a new killer strain which was heterothallic by mating.

7. Comparison of the fermentation ability of parental strains and their hybrid showed that the hybrid was better than the parental killer strain in winemaking.

Recommendation

The genetic manipulation of killer character to food industrial strain would therefore provide the strain with a self-cleaning property by virtue of the activity of the killer toxin produced.

The toxin of this yeast should be extracted and analysed for toxicology before applying in food. In addition, the toxin of this yeast might be purified for the other useful purposes i.e., food preservative for finished products.