

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF APPENDIXES	viii
ABSTRACT	ix
INTISARI.....	x
CHAPTER I. INTRODUCTION	1
1.1 Background of Research	1
1.2 Research Problem.....	4
1.3 Aim of Research.....	5
1.4 Research Benefit	5
CHAPTER II. LITERATURE REVIEW.....	7
2.1 <i>Jengkol (Pithecellobium jiringa)</i>	7
2.2 Blanching	9
2.3 Potential of <i>jengkol</i> as flavoring	14
2.4 <i>Jengkol</i> potential as umami	15
2.5 Extraction of non-volatile taste components from <i>jengkol</i> seeds....	18
2.6 Equivalent umami concentration.....	19
2.7 High Pressure Liquid Chromatography (HPLC).....	21
2.8 Liquid Chromatography Mass Spektrometry (LC-MS/MS)	22
2.9 Hypothesis.....	23
CHAPTER III MATERIAL AND METHOD	25
3.1 Research place and Time	25
3.2 Material and Equipments	25
3.2.1 Material	25
3.2.2 Equipments.....	25
3.3 The stages of research	26
3.3.1 Steam blanching of <i>jengkol</i> seeds	26

3.3.2 Slicing, drying and grinding of <i>jengkol</i> seeds	26
3.4 Analysis Methods	27
3.4.1 Colour Analysis	27
3.4.2 Proximate Composition	27
3.4.3 Assay of Soluble Sugars	28
3.4.4 Assay of Organic Acids	28
3.4.5 Analysis of Total Amino Acids	29
3.4.6 Free Amino Acid Assay	30
3.4.7 5'-Nucleotides Assay	32
3.4.8 Equivalent Umami Concentration (EUC)	32
CHAPTER IV. RESULT AND DISCUSSION	34
4.1 Color Analysis	34
4.2 Proximate Composition	35
4.3 Soluble Sugars	36
4.4 Organic Acids	39
4.5 Total Amino Acids	41
4.6 Free Amino Acids	46
4.7 5'-Nucleotides Components	48
4.8 Equivalent umami concentration (EUC)	49
CHAPTER V. CONCLUSION AND FUTURE WORK	51
5.1 Conclusion	51
5.2 Future work or Recommendation	52
REFERENCES	53
APPENDIXES	60

LIST OF TABLES

Tabel 2.1. Nutritional composition in 100 grams of <i>Jengkol</i>	9
Tabel 2.2. Comparing Steam dan Water Blanching	12
Tabel 3.1. Scheme of elution gradient for amino acid total	30
Tabel 4.1. The changes of L, a, and b values in <i>jengkol</i> after steam blanching and drying	34
Tabel 4.2. Proximate composition of fresh and steam <i>jengkol</i> (dry matter)	36
Tabel 4.3. The changes of soluble sugar in <i>jengkol</i> after steam blanching	38
Tabel 4.4. The changes of organic acid in <i>jengkol</i> after steam blanching.....	41
Tabel 4.5. The changes of free amino acids in <i>jengkol</i> after steam blanching.....	42
Tabel 4.6. Percentage of amino acids and Protein efficiency ratio (PER) on fresh and steam <i>jengkol</i>	45
Tabel 4.7. Free amino acid levels on fresh and steam <i>jengkol</i>	47
Tabel 4.8. Levels of amino acid taste components on fresh and steam <i>jengkol</i>	47
Tabel 4.9. Levels of 5'-nucleotide components on fresh and steam <i>jengkol</i>	48

LIST OF FIGURES

Figure 2.1. Branches and young <i>jengkol</i> leaves	8
Figure 2.2. Fruits and <i>jengkol</i> seeds	8
Figure 2.3. The purposes of Blanching of <i>jengkol</i> seed	11
Figure 2.4. Chemical structure of the basic components of umami flavor	16
Figure 2.5. Molecular structure of the basic umami enhancing nucleotides guanosine 5-monophosphate (6) and inosine 5-monophosphate (7)	16
Figure 2.6. LC-MS/MS	23
Figure 4.1. The results of the HPLC chromatogram of soluble sugars in fresh <i>jengkol</i> extract	37
Figure 4.2. The results of the HPLC chromatogram of soluble sugars in steam <i>jengkol</i> extract	37
Figure 4.3. The results of the HPLC chromatogram of organic acids in fresh <i>jengkol</i>	40
Figure 4.4. The results of the HPLC chromatogram of organic acids in steam <i>jengkol</i>	40
Figure 4.5. Profile of amino acids before and after steam blanching.....	43
Figure 4.6. Changes of the equivalent umami concentration (EUC) in <i>Jengkol</i> after steam blanching treatment	50

APPENDIXES

Appendix 1. Determination of water content	60
Appendix 2. Determination of protein content	61
Appendix 3. Determination of fat content.....	62
Appendix 4. Determination of ash content	63
Appendix 5. Raw data of amino acid analysis on the fresh <i>jengkol</i>	64
Appendix 6. Raw data of amino acid analysis on the steam <i>jengkol</i>	66
Appendix 7. Data Percentage of amino acids on fresh and steam sample	68
Appendix 8. Raw data of proximate analysis.....	69
Appendix 9. Raw data of soluble sugar	70
Appendix 10. Raw data of organic sugar	71
Appendix 11. Chromatogram of AMP 25 ppm of authentic standart	72
Appendix 12. Chromatogram of IMP 25 ppm of authentic standart.....	73
Appendix 13. Chromatogram of GMP 25 ppm of authentic standart	74
Appendix 14. Chromatogram of mix 25 ppm standart.....	75
Appendix 15. Chromatogram of mix 50 ppm standart.....	75
Appendix 16. Chromatogram of mix 75 ppm standart.....	76
Appendix 17. Chromatogram of mix 100 ppm standart.....	76
Appendix 18. Chromatogram of mix 125 ppm standart.....	77
Appendix 19. Chromatogram of 5'-nucleotide on the <i>jengkol</i> fresh	78
Appendix 20. Chromatogram of 5'-nucleotide on the steamed <i>jengkol</i>	79
Appendix 21. Chromatogram of standar 88.16 ppm of amino acids	80
Appendix 22. Chromatogram of standar 76.3 ppm of amino acids	81
Appendix 23. Chromatogram of standar 352.5 ppm of amino acids	82
Appendix 24. Chromatogram of standar 750 ppm of amino acids	83
Appendix 25. Chromatogram of standar 1128 ppm of amino a acids	84
Appendix 26. Chromatogram of free amino acids on the fresh <i>jengkol</i>	85
Appendix 27. Chromatogram of free amino acids on the steamed <i>jengkol</i>	86
Appendix 28. Road map of research	87
Appendix 25. Documentation of research.....	89