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Degradation of ascorbic acid in roselle juice concentrate / Hong Sok Lai.

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21030 KUALA TERENGGANU

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Pengarang HONG SOK LAI		No. Panggilan LP 10	
Judul Degradation of ascorbic acid in roselle juice concentrate - KST			
Tarikh	Waktu Pemulangan	Nombor Ahli	Tanda tangan
21/8/05	1.00 pm	UU 9029	2002

18/2/10

HAK MILIK
PERPUSTAKAAN KUSTEM

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DEGRADATION OF ASCORBIC ACID IN ROSELLE JUICE CONCENTRATE

By

HONG SOK LAI

Thesis submitted in partial fulfilment of the requirement for the
Degree of Bachelor of Science (Hons.) Chemistry

FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY
MALAYSIA
UNIVERSITY PUTRA MALAYSIA

2002

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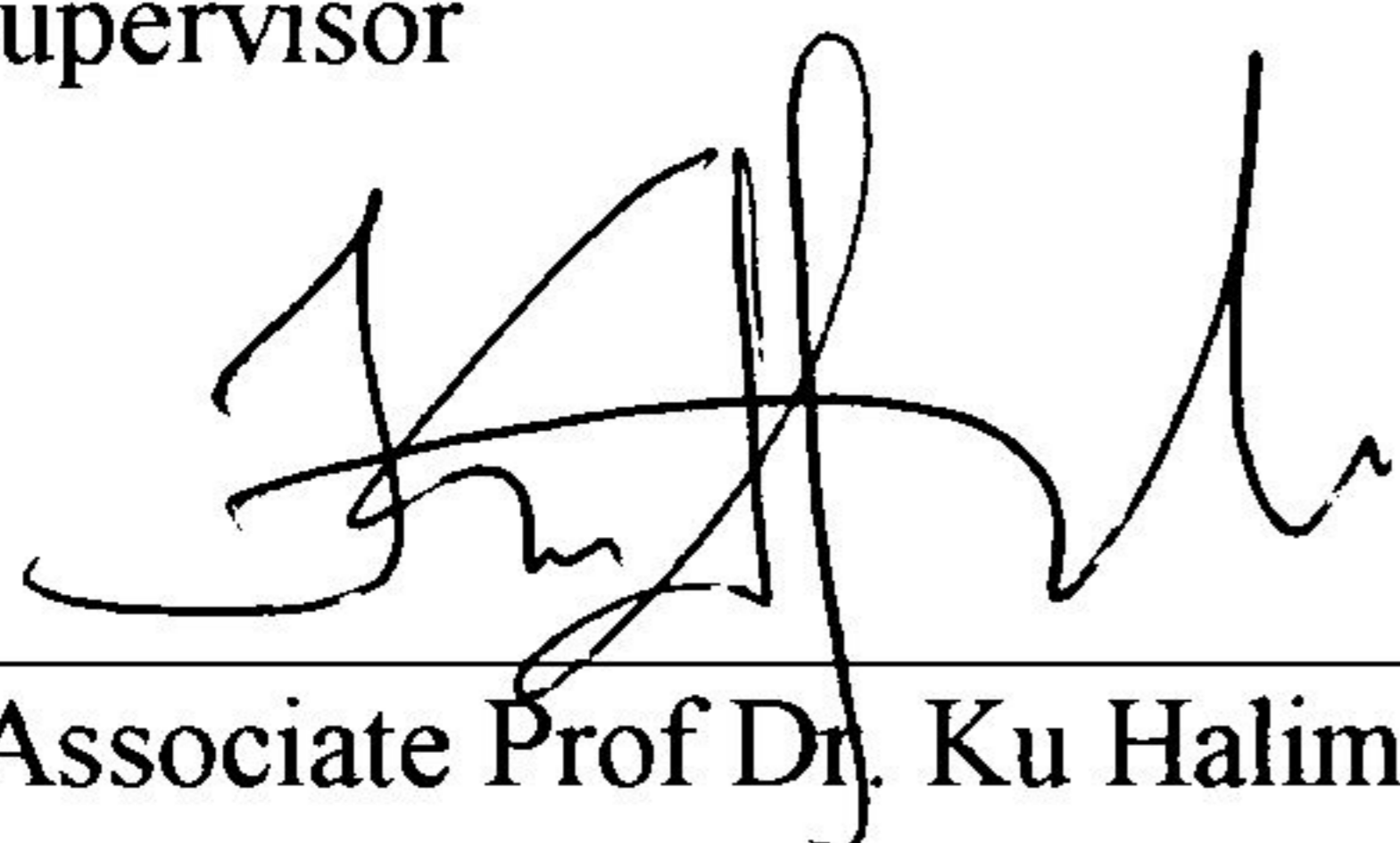
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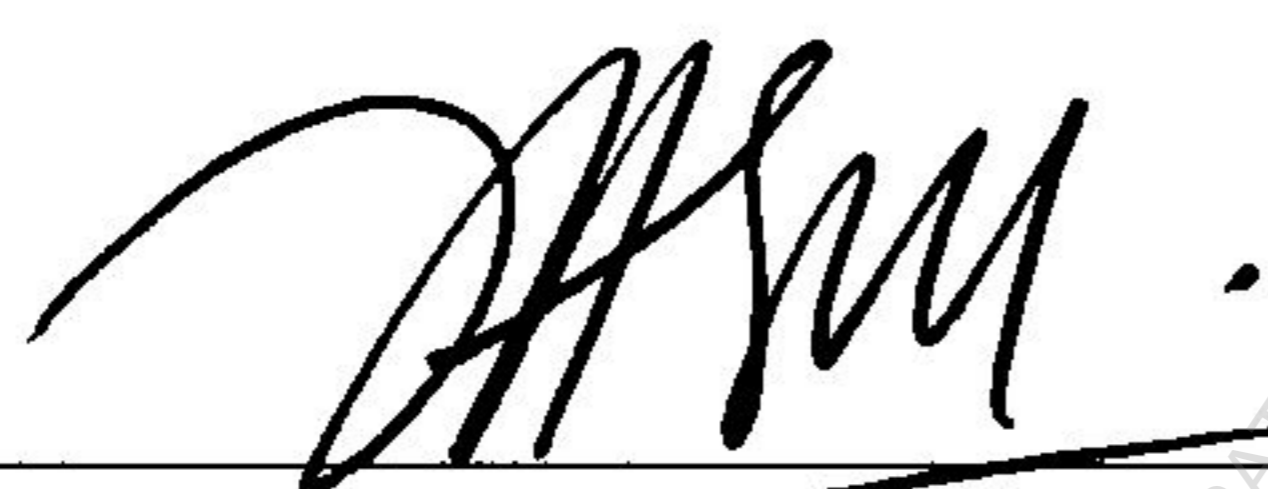
Supervisor



(Associate Prof Dr. Ku Halim Ku Bulat)

Date: 27 Mac 2002

Associate Supervisor



(Prof. Madya Dr. Awang Soh Mamat)

Date: 27.3.2002

Coodinator



(Encik Suhaimi Suratman)

Date: 27/3/02

Acting Head Department of Chemical Sciences



(Prof. Dr. Law Ah Theem)

Date: 27/3/02

ACKNOWLEDGEMENT

First and foremost, I would like to thank my parents for everything they have given to me from moral support to financial support. Everything that both of you have done and taught me has shaped what I am today. Thank you very much, Mom and Dad.

Secondly, I would like to express my deepest gratitude to my main supervisor, Associate Professor Dr. Ku Halim Ku Bulat for his fullest support, guidance and valuable advices. Without his guidance, I would not be able to learn so much in the progress of completing this final year project. Not forgetting also Associate Professor Dr. Awang Soh, my associate supervisor whom has introduced me to roselle, *Hibiscus sabdariffa* L.

I would also want to express my gratitude to Puan Mona Ariffin from Monroe Sdn. Bhd. for her products, advices and help. Without her and Monroe Sdn. Bhd., I would not able to get roselle juice concentrate so easily for my final year project.

I would also want to extend my gratitude to Mr. Lee Guan Serm who has been by my side all the time during the progress of my final year project. He has been there for me during my ups and downs. Never the least, I would like to thank my coursemates and housemates for their comforting words and encouragements. Thank you again to all of named above and those who are not named for helping me in completing this final year project.

ABSTRACT

A study has been conducted to determine the factors that influenced the degradation of ascorbic acid in roselle juice concentrate and its rate of degradation. Roselle juice concentrate was obtained from the courtesy of Puan Mona Ariffin from Monroe Sdn Bhd. The ascorbic acid content was determined spectrophotometrically by using Varian Cary 50 UV-Vis Spectrophotometer at the wavelength of 249nm. The degradation of ascorbic acid was studied for the effect of storage-temperature, effect of added acid and effect of fluorescent. After 200 hours of storage, ascorbic acid in roselle juice concentrate degraded about 17.43% at 8°C, 19.67% at room temperature (29°C) and 20.79% when exposed to fluorescent light at room temperature. However, ascorbic acid content in samples added with acids tends to increase at the earlier stage of the storage time but degraded after 40 or 80 hours. Fluorescence effect seemed to slow down the effect of ascorbic acid degradation the samples. The results from this study showed that ascorbic acid in the samples with acids added to them is relatively more stable in metaphosphoric acid and oxalic acid even the samples were exposed to fluorescent light.

ABSTRAK

Kajian terhadap faktor-faktor dan kadar degradasi asid askorbik dalam jus roselle pekat telah dijalankan. Jus roselle pekat diperoleh atas sumbangan Puan Mona Ariffin dari Monroe Sdn Bhd. Kandungan asid askorbik ditentukan secara spektrofotometrik dengan menggunakan Spektrophotometer UV-Vis dari Varian model Cary 50 pada panjang gelombang 249nm. Degradasi asid askorbik dikaji untuk kesan suhu-penyimpanan, kesan penambahan acid dan kesan pendedahan kepada lampu fluorescent. Selepas penyimpanan selama 200 jam, asid askorbik dalam jus roselle pekat berdegradasi sebanyak 17.43% pada 8°C, 19.67% pada suhu bilik (29°C) dan 20.79% apabila terdedah kepada lampu fluorescent pada suhu bilik. Walau bagaimanapun, kandungan asid askorbik dalam sampel yang ditambah dengan asid menunjukkan penambahan asid askorbik pada awal masa penyimpanan tetapi asid askorbik ini berdegradasi selepas 40 atau 80 jam dalam penyimpanan. Kesan fluorescence seolah-olah melambatkan kadar degradasi asid askorbik dalam sampel-sampel tersebut. Keputusan dari kajian ini menunjukkan asid askorbik dalam sampel yang telah ditambah dengan asid adalah secara relatifnya lebih stabil dalam asid metafosforik dan asid oxalik walaupun terdedah kepada kesan lampu fluorescent.