ISOLATION AND IDENTIFICATION
OF STEROLS IN PALM OIL AND
THEIR ANALYSIS BY GC AND GC-MS

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2000
ISOLATION AND IDENTIFICATION OF STEROLS IN PALM OIL AND THEIR ANALYSIS BY GC AND GC-MS

A PROJECT REPORT SUBMITTED TO THE FACULTY OF SCIENCE UNIVERSITY OF MALAYA IN THE PART-FULFILMENT OF SCGS 5189 FOR THE DEGREE OF MASTER OF SCIENCE IN ANALYTICAL CHEMISTRY AND INSTRUMENTAL ANALYSIS

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ACKNOWLEDGMENT

I wish to express my deepest gratitude to Dr. Kamal Aziz Ketuly for supervising and giving guidance throughout this project. Also not forget to thank Dr. Choo Yuen May (PORIM) for her collaborations on this project and supply of palm oil samples and some of the standard sterols. Their advice and comments are always in my appreciation. My special thanks to Professor C. J. W. Brooks (Chemistry Dept., Glasgow University, Scotland, United Kingdom) for donating the rest of the sterol standards.

Thanks also to Mr. Siew Yau Foo for his guidance and assistance in the use of GC-MS. I am indebted to many friends, especially Mr. Wong Chee Kong and Mr. Nasr Yousef M. J. Omar (MSc research student at Chemistry Dept., UM), for their assistance in various ways.

Finally, appreciation to Mr. Low Tek Sing and my beloved parents for their support and encouragement until completion of my study.
ABSTRACT

The unsaponifiable matters were separated from crude palm oil, crude palm kernel oil, and crude palm fibre oil. The sterol fractions were isolated by preparative thin layer chromatography and were then analysed by gas chromatography and combined gas chromatography-mass spectrometry. Qualitative separations of sterols are illustrated. Tables are presented showing the sterol composition determined in the oils, values obtained for individual contents are in broad agreement with other published results. There were no major differences between crude palm oil, crude palm kernel oil and crude palm fibre oil with respect to their sterols composition. \( \beta \)-sitosterol was found as the most predominant component in the sterol fraction from all oils. Sitostanol and ergosterol, of which their existence was not reported in any previous studies on palm oil, were found in the crude palm fibre oil samples, but were not detected in the crude palm oil and crude palm kernel oil samples.
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<td>Appx.</td>
<td>appendix</td>
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<tr>
<td>BSTFA</td>
<td>N,O-bis(trimethylsilyl)-trifluoroacetamide</td>
</tr>
<tr>
<td>cm</td>
<td>centimetre</td>
</tr>
<tr>
<td>CPO</td>
<td>crude palm oil</td>
</tr>
<tr>
<td>CPKO</td>
<td>crude palm kernel oil</td>
</tr>
<tr>
<td>CPFO</td>
<td>crude palm fibre oil</td>
</tr>
<tr>
<td>FID</td>
<td>flame ionisation detector</td>
</tr>
<tr>
<td>Fig.</td>
<td>Figure</td>
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<tr>
<td>g</td>
<td>gram (s)</td>
</tr>
<tr>
<td>GC</td>
<td>gas chromatography</td>
</tr>
<tr>
<td>GC-MS</td>
<td>gas chromatography-mass spectrometry</td>
</tr>
<tr>
<td>HDL</td>
<td>high-density lipoprotein</td>
</tr>
<tr>
<td>HPLC</td>
<td>high-performance liquid chromatography</td>
</tr>
<tr>
<td>kg</td>
<td>kilogram (s)</td>
</tr>
<tr>
<td>i.d.</td>
<td>internal diameter</td>
</tr>
<tr>
<td>LDL</td>
<td>low-density lipoprotein</td>
</tr>
<tr>
<td>MS</td>
<td>mass spectrometry</td>
</tr>
<tr>
<td>μg</td>
<td>microgram (s)</td>
</tr>
<tr>
<td>μl</td>
<td>microlitre (s)</td>
</tr>
<tr>
<td>Me</td>
<td>methyl</td>
</tr>
<tr>
<td>mg</td>
<td>miligram (s)</td>
</tr>
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<td>ml</td>
<td>mililitre (s)</td>
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</tbody>
</table>
mm   milimetre (s)
m.p. melting point
MW   molecular weight
m/z  mass/ion charge
NMR  nuclear magnetic resonance
PORIM Palm Oil Research Institute of Malaysia
ppm  part per million
v/v  volume over volume
w/v  weight over volume
SIM  selected ion monitoring
TIC  total ion chromatogram
TLC  thin layer chromatography
TMS  trimethylsilyl ethers
TMSCI trimethylchlorosilane
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