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# THE CHEMICAL CONSTITUENTS OF LIPIDS FROM FILTER CAKE AND SUGAR CANE RIND

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ลิพิดซึ่งสกัดจากกากตะกอนกรองของโรงงานน้ำตาล 4 แห่งด้วยเฮกเซน มีปริมาณ 5.3-17.8% สามารถแยกสารได้ 5 ชนิดจากลิพิดนี้ได้แก่ ของผสมของไฮโดรคาร์บอนโซ่ตรง ($C_{24}$-$C_{35}$), ของผสมของอัลดีไฮด์โซ่ตรง ($C_{22}$-$C_{34}$), ของผสมของสเตอรอยด์ (campesterol, β-sitosterol และ stigmasterol), ของผสมของแอลกอฮอล์โซ่ตรง ($C_{26}$-$C_{35}$) และของผสมของกรดคาร์บอกซิลิกโซ่ตรง ($C_{24}$-$C_{34}$) โดยมีของผสมของแอลกอฮอล์เป็นองค์ประกอบหลัก โดยเฉพาะอย่างยิ่ง triacontanol ($C_{30}H_{61}OH$)

ผลการเปรียบเทียบองค์ประกอบทางเคมีของผิวอ้อย 3 พันธุ์ (F147, F153 และ Q83) พบว่าปริมาณลิพิดของพันธุ์ F153 มีมากเกือบ 2 เท่าของปริมาณลิพิดของพันธุ์ F147 และ Q83 จากลิพิดของผิวอ้อยได้ทำการแยก kojic acid, ของผสมของไฮโดรคาร์บอนโซ่ตรง ($C_{25}$-$C_{35}$), ของผสมของกรดโซ่ตรง ($C_{22}$-$C_{34}$), ของผสมของอัลดีไฮด์โซ่ตรง ($C_{23}$-$C_{34}$), ของผสมของแอลกอฮอล์โซ่ตรง ($C_{25}$-$C_{35}$) และสเตอรอยด์ ของผสมของแอลกอฮอล์โซ่ตรงโดยเฉพาะ triacontanol เป็นองค์ประกอบหลัก และมีของผสมของอัลดีไฮด์โซ่ตรงเป็นสารซึ่งมีปริมาณรองลงมาในอ้อยพันธุ์ F153 และ Q83 ในขณะที่ของผสมของกรดโซ่ตรงเป็นสารซึ่งมีปริมาณรองลงมาในอ้อยพันธุ์ F147 ในอ้อยทั้ง 3 พันธุ์มีปริมาณของไฮโดรคาร์บอนและสเตอรอยด์เล็กน้อย

ได้รายงานผลการวิเคราะห์เปรียบเทียบสารที่แยกได้แต่ละชนิดในกากตะกอนกรองโรงงานต่าง ๆ และผิวอ้อยพันธุ์ต่าง ๆ พร้อมทั้งเสนอการใช้ประโยชน์ของสารที่แยกได้

ภาควิชา เคมี
สาขาวิชา เคมีอินทรีย์
ปีการศึกษา 2532

ลายมือชื่อนิสิต .....
ลายมือชื่ออาจารย์ที่ปรึกษา .....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม .....

VIYADA SALEECHAN : THE CHEMICAL CONSTITUENTS OF LIPIDS FROM FILTER CAKE AND SUGAR CANE RIND. THESIS ADVISOR : ASSO. PROF. UDOM KOKPOL, Ph.D., 203 PP.

The crude lipids extracted from filter cakes of 4 refined sugar factories by n-hexane were 5.3-17.8%. There were 5 substances isolated from the lipids, a mixture of long chain aliphatic hydrocarbons ($C_{24}$-$C_{35}$), a mixture of long chain aliphatic aldehydes ($C_{22}$-$C_{34}$), a mixture of steroids (campesterol, β-sitosterol, stigmasterol), a mixture of long chain aliphatic alcohols ($C_{26}$-$C_{35}$), and a mixture of long chain aliphatic carboxylic acids ($C_{24}$-$C_{34}$). The mixture of long chain alcohols was the major composition, especially triacontanol ($C_{30}H_{61}OH$).

The comparative chemical constituents of 3 varieties of sugar cane rinds (F147, F153 and Q83) showed that the lipid content of F153 variety was nearly two times more than the lipid content of both F147 and Q83 varieties. Kojic acid, a mixture of long chain hydrocarbons ($C_{25}$-$C_{35}$), a mixture of long chain acids ($C_{22}$-$C_{34}$), a mixture of long chain aldehydes ($C_{23}$-$C_{34}$), a mixture of long chain alcohols ($C_{25}$-$C_{35}$) and steroids (unidentified) were isolated from the lipids. The mixture of long chain alcohols, especially triacontanol, was the major substance of all 3 varieties and the second major isolated substance was the mixture of long chain aldehydes in the F153 and Q83 varieties while the mixture of long chain acids was the second major substance in F147 variety. All 3 varieties contained small amount of hydrocarbons and trace of steroids.

The comparative analytical data of each isolated substances from various filter cakes and sugar cane rinds were reported and the utilization of them were discussed.

ภาควิชา เคมี

สาขาวิชา เคมีอินทรีย์

ปีการศึกษา 2532

ลายมือชื่อนิสิต .....

ลายมือชื่ออาจารย์ที่ปรึกษา .....

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม .....

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# LIST OF ABBREVIATION

| | |
|---|---|
| b | broad |
| °C | degree Celsius |
| Cpd. | compound |
| $cm^{-1}$ | unit of wavenumber |
| d | doublet (NMR) |
| dd | double doublet (NMR) |
| DMSO | dimethyl sulfoxide |
| 2,4-DNP | 2,4-dinitrophenylhydrazine |
| g | gram (s) |
| GC | gas chromatography |
| m | multiplet (NMR) |
| m/e | mass to charge ratio |
| mL. | milliliter (s) |
| m.p. | melting point |
| MW | molecular weight |
| $M^+$ | molecular ion in mass spectrum |
| nm | nanometer |
| ppm. | part per million |
| Rf | rate of flow in chromatography |
| s | singlet (NMR) or sharp (IR) |
| std. | standard |
| sub. | substance |
| wt | weight |