

# 들깨 종실 기름함량과 지방산 조성의品種間差異

作物試驗場 李正日, 方鎮淇, 李奉鎭  
建國大學校 金基駿

## Varietal Difference of Seed Oil Content and Fatty Acid Composition in Perilla

Crop Experiment Station J.I.Lee, J.K.Bang, B.H.Lee  
KonKuk Univ. K.J.Kim

### 試驗目的

---

세需要 創出을 위한 耐酸敗 食用油用 高含油 低 리놀렌酸 良質品種 및 工業用油로서의 高리놀렌酸 品種 등 多樣한 用途에 適合한 品種開發에 必要한 基礎資料를 얻고자 기름함량, 脂肪酸組成 및 Glyceride의 油質特性 등의 品種間 差異를 調査 分析하였음.

### 材料 및 方法

---

1. 供試材料 : 葉實들깨 등 165品種
2. 方法  
가. 기름함량 分析 : Soxtec 및 NIR 법  
나. 脂肪酸組成 : Sodium methoxide를 촉매로하는 methanolysis법에 따라 ester화하여 GLC로 分析  
다. Glyceride組成 : TLC 分析法  
라. Glyceride別 脂肪酸組成 : TLC로 分離한후 GLC 分析

### 試驗結果

---

1. 들깨 165品種의 平均기름함량은 45.3%였으며 種皮色別로는 褐色種이 가장 높게 나타났다
2. 들깨의 脂肪酸는 Palmitic, Stearic, Oleic, Linoleic, Linolenic acid 등이었으며 不飽和脂肪酸이 92% 였다.
3. 기름함량과 種實重間에 負의 相關을 보였으며, 種實重은 Linoleic acid 와는 正의 相關을, Linoleic acid 와는 負의 相關을 나타내었다.
4. Glyceride 油質特性은 Tri-glyceride가 89.2%로 大部分을 차지하였으며, Mono 및 di-glyceride와 유리지방산에는 탄소수가 적고 포화지방산인 Palmitic, Stearic acid 가 增加되었다.

Table . Frequency distribution of oil content in seed coat color of perilla varieties.

Variety group	Oil content (%)					No. of vars.	Mean (%)	Min. (%)	Max. (%)
	31-35	36-40	41-45	46-50	51-55				
Dark brown	1	2	5	11	-	19	45.5	34.8	49.9
Brown	-	-	-	6	-	6	47.8	46.6	48.9
Gray brown	1	27	20	55	11	114	45.6	35.8	54.1
Gray	-	5	4	3	-	12	42.2	38.1	49.0
Light gray	-	3	7	4	-	14	43.7	36.5	48.5
Total	2	37	36	79	11	165	45.3	34.8	54.1

Table . Frequency distribution of oil content in maturity of Perilla varieties.

Variety group	Oil content (%)					No. of vars.	Mean (%)	Min. (%)	Max. (%)
	31-35	36-40	41-45	46-50	51-55				
Early	1	1	2	3	-	7	43.4	35.8	49.0
Medium	-	13	8	29	2	52	45.5	36.5	52.0
Late	1	23	26	47	9	106	45.3	34.8	54.1
Total	2	37	36	79	11	165	45.3	34.8	54.1

Table . The fatty acid compositions of each glyceride with CC(Cas Chromatography) after TLC(Thin-Layer Chromatography) separation in perilla varieties.

Varieties	Glycerides	Fatty acid composition (%)				
		Palmitic	Stearic	Oleic	Linoleic	Linolenic
Suwon 8	Tri *	5.6	1.8	14.4	15.7	63.4
	Other *	7.1	2.2	12.6	13.9	64.2
Suwon 10	Tri *	5.8	2.0	14.6	14.7	62.8
	Other *	8.0	3.1	9.8	14.0	65.1
Yeupsil	Tri *	6.5	2.1	14.5	18.0	59.0
	Other *	9.1	4.0	9.5	14.2	63.2
Okdong	Tri *	6.9	1.8	15.5	14.3	61.4
	Other *	10.0	4.5	11.3	10.2	64.0

\* : Tri indicates tri-glyceride, Other include mono, di glyceride and free fatty acids

Table . Mean percentage of fatty acid composition in maturity of perilla varieties.

Variety group	No. of vars.	Palmitic	Stearic	Oleic	Linoleic	Linolenic	Saturate*	Unsatrate*
Early	7	6.4	1.6	13.1	16.1	62.8	8.1	91.9
Mediym	52	6.0	1.9	13.7	15.1	63.1	8.0	92.0
Late	106	6.0	1.9	14.1	14.6	63.5	7.8	92.2
Mean (165)		6.0	1.9	14.0	14.8	63.3	7.9	92.1

\* Saturate : Palmitic + Stearic  
Unsatrate : Oleic + Linoleic + Linolenic

Table . Mean percentage of fatty acid composition in seed coat color of perilla varieties.

Variety group	No. of vars.	Palmitic	Stearic	Oleic	Linoleic	Linolenic	Saturate*	Unsatrate*
Dark brown	19	6.0	2.0	14.6	14.9	62.6	8.0	92.0
Brown	6	6.3	2.2	14.4	14.4	62.7	8.5	91.5
Gray brown	114	6.0	1.8	13.7	14.8	63.7	7.8	92.2
Gray	12	6.0	1.8	14.3	15.1	63.9	9.8	92.3
Light gray	14	6.0	2.0	14.3	14.7	63.0	8.0	92.0
Mean (165)		6.1	2.0	14.3	14.8	63.0	8.1	92.0

\* Saturate : Palmitic + Stearic  
Unsatrate : Oleic + Linoleic + Linolenic