

# 麥種別 搗精率 및 粒度에 따른 $\beta$ -glucan 含量과 特性

作物試驗場 : 金善林 · 孫榮求 · 黃鍾珍 · 許翰淳

## $\beta$ -glucan contents and their characteristics of winter cereals according to various milling recoveries and particle size

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### 실험 목적

맥종별 도정율 및 입도에 따른  $\beta$ -glucan의 분포특성을 검토하여 이를 이용한 새로운 식품 개발의 기초 자료로제공 하고

### 재료 및 방법

- 가) 공시재료 : 겉보리(3종), 쌀보리(2종), 맥주보리, 호밀(2종), 귀리(2종)
- 나) 처리내용 : 도정율 - 종실중 대비 7수준, 원분 및 강 입 도 - 원분, 강 및 mesh별 4수준
- 다) 조사항목 :  $\beta$ -glucan함량 ( Magazyme법 ), Hunter's color value (L, a, b)

### 결과 요약

- 가) 입도에 따른  $\beta$ -glucan의 함량은 100메쉬 이하 100~140메쉬에서 높았다
- 나) 도정율에 따른  $\beta$ -glucan의 함량은 80~50%까지 높게 분포하고 있었다
- 다)  $\beta$ -glucan의 활용도는 도정율에 따른 방법보다 입도분획에 의한 방법이 유리한 것으로 판단 되었다
- 라)  $\beta$ -glucan의 함량과 색차와의 관계를 볼 때 보리는 L 및 b와 귀리는 b와 밀접한 관계를 맺고 있었으며 호밀은 L, a, b 모두 유의한 관계가 있었다

Table 1  $\beta$ -glucan contents of winter cereals according to various particle sizes (unit : %) (unit : %)

Particle size (mesh)	Covered barley			Naked barley		Malting barley (Jinkwangbori)	Rye		Oat	
	Gangbori	Olbori	Chalbori	Suweon304	Chalssalbori		Chilbohomil	Chunchohomil	Algwiwri	Malgiwri
Raw flour	5.8	5.4	5.6	5.5	3.5	4.6	2.7	2.4	4.5	5.2
100 >	9.1	9.9	9.3	11.4	10.0	6.7	3.4	3.1	9.8	11.4
100-140	5.7	11.4	9.1	5.8	12.5	4.8	2.2	2.7	3.9	4.2
140-200	1.7	4.7	2.8	2.0	12.9	1.0	0.6	0.8	2.3	3.5
200 <	1.0	1.4	1.0	1.3	1.8	0.9	0.9	0.6	1.5	3.2
Bran	2.3	3.3	2.5	3.1	3.0	3.0	2.2	2.3	3.3	2.9

Table 2.  $\beta$ -glucan contents of barley and rye according to various milling recoveries (Unit : %)

Milling recovery	Barley			Rye	
	Chalbori	Chalssalbori	Chilbohomil	Chunchohomil	
Raw flour	5.6	3.5	2.7	2.4	
Bran	1.5	3.0	2.2	2.3	
90%	5.6	4.5	1.4	2.0	
80%	5.4	8.2	1.3	2.0	
70%	6.0	6.3	2.8	2.5	
60%	6.3	6.1	3.6	3.8	
50%	6.7	5.7	1.3	1.5	
40%	6.6	3.2	1.4	1.4	
30%	6.2	2.2	1.0	0.9	

Table 3. Comparison of Hunter's color value according to various milling recoveries on barley and rye

Milling recovery	Barley						Rye					
	Chalbori			Chalssalbori			Chilbolomil			Chunchuhomil		
	L	a	b	L	a	b	L	a	b	L	a	b
Raw flour	77.8	-0.56	10.0	83.1	-0.74	7.5	83.3	-1.44	9.1	82.3	-1.30	7.7
90%	82.7	-0.65	8.8	82.3	-0.63	7.2	80.8	-1.63	9.6	81.0	-1.52	10.4
80%	83.0	-0.76	8.3	83.3	-0.67	7.9	83.1	-1.59	9.6	81.9	-1.45	8.4
70%	86.1	-0.75	7.0	85.8	-0.79	8.4	82.9	-1.57	9.4	82.0	-1.36	8.2
60%	87.3	-0.66	6.7	86.4	-0.75	8.9	83.3	-1.42	9.2	82.7	-1.23	8.3
50%	88.3	-0.62	6.7	86.8	-1.07	8.6	84.4	-1.31	9.5	82.3	-1.07	8.0
40%	87.5	-0.62	6.2	87.3	-0.98	9.1	84.9	-1.21	9.4	82.4	-0.97	7.9
30%	88.3	-0.54	6.2	87.3	-0.86	10.6	85.5	-1.11	8.8	83.8	-0.94	7.5
Bran	63.3	0.43	16.7	65.9	0.61	18.4	69.2	0.14	13.4	67.9	0.02	12.9

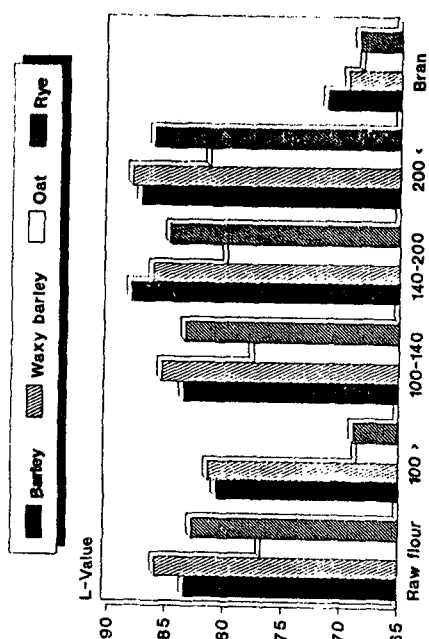


Fig. 1. L-values of winter cereals according to various particle sizes.

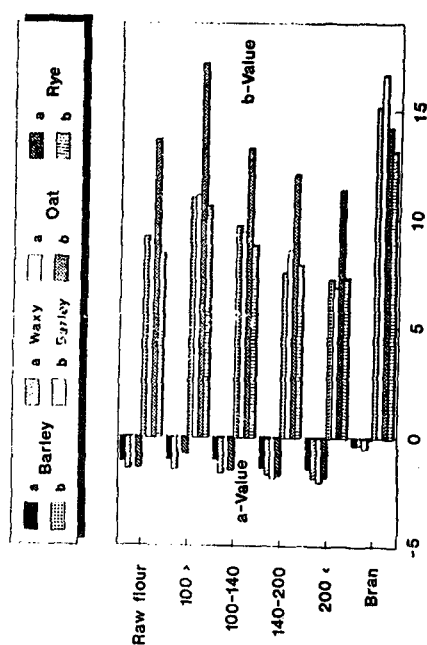


Fig. 2. The a- and b-values of winter cereals according to various particle sizes.

Table 4. Relationship between  $\beta$ -glucan contents and Hunter's color value of barley, oat and rye

Hunter's color value	Barley	Oat	Rye
L	$\beta$ -glucan(%) = $-540.8 + 13.9L - 0.09L^2$ ( $R^2 = 0.679$ **)	NS	$\beta$ -glucan(%) = $-149.6 + 4.08L - 0.03L^2$ ( $R^2 = 0.703$ **)
a	NS	NS	$\beta$ -glucan(%) = $2.04 - 3.72a - 253a^2$ ( $R^2 = 0.881$ **)
b	$\beta$ -glucan(%) = $-36.6 + 7.73b - 0.33b^2$ ( $R^2 = 0.762$ **)	$\beta$ -glucan(%) = $-42.7 - 6.65b - 0.28b^2$ ( $R^2 = 0.891$ **)	$\beta$ -glucan(%) = $-12.7 + 2.8b - 0.13b^2$ ( $R^2 = 0.544$ *)