

Correlation of Quality Characteristics of Black Rice Lines

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Objectives

It has been consistently increasing to consume on black rice as it prefers eating a milled rice only to mix with black rice as a healthy food. Therefore, it is necessary to select good palatability black rices, analysing the quality characteristics of black rice lines by crossing Heugnambyeo and Milyang153

Materials and Methods

- Materials : Heugnambyeo × Milyang153
 - glutinous black rice lines(13), non-glutinous black rice lines(11)
- Methods
 - Amylogram characteristics : Rapid Visco Analyser(RVA-3D, Newport)
 - Amylose Content(%) : Juliano method
 - Anthocyanin content(%)
 - Extraction solvent : 0.1% HCl-MeOH
 - Spectrophotometer(DU-600, Beckman)
 - Chromaticity : Color difference meter(Minolta 3500-d)

Results and Discussion

- Average amylose content of glutinous and non-glutinous black rice lines by crossing Heugnambyeo and Milyang153 is 5%, 13%.
- Amylose content is highly positive correlated with setback, cool viscosity, hot viscosity, pasting time.
- Anthocyanin content is negative correlated with lightness(L), redness(a), yellow(b) of black rice lines.
- It was considered useful method for glutinous rice breeding because of clearly distinguished glutinous with non-glutinous black rice lines.

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Table 1. Average Amylose content(%) and Amylogram Characteristics of Black Rice of 20 Varieties and Lines

	Amylose	Breakdown	Setback	Peak viscosity	Cool viscosity	Pasting temp	Hot viscosity	Pasting time
glutinous black rice lines	5.1	66.9	-57.4	90.4	33.2	66.9	23.8	3.2
non-glutinous black rice lines	13.9	46.2	21.5	105.5	127.0	70.3	59.3	5.8

* amylogram : RVA-3D

Table 2. Correlation of Amylose Content and Amylogram Characteristics of Black Rice of 20 Varieties and Lines

	Amylose	Breakdown	Setback	Peak viscosity	Cool viscosity	Pasting temp	Hot viscosity	Pasting time
Amylose	1.000							
Breakdown	-0.505	1.000						
Setback	0.951	-0.654	1.000					
Peak viscosity	0.435	0.522	0.293	1.000				
Cool viscosity	0.933	-0.280	0.908	0.667	1.000			
Pasting temp	0.526	-0.184	0.563	0.364	0.597	1.000		
Hot viscosity	0.922	-0.249	0.884	0.696	0.994	0.566	1.000	
Pasting time	0.944	-0.663	0.983	0.272	0.886	0.526	0.868	1.000

Table 3. Correlation Anthocyanin Content and Chromaticity of Black Rice of 20 Varieties and Lines

	Color			Anthocyanin
	L	a	b	
L	1.000			
a	0.592	1.000		
b	0.496	0.901	1.000	
Anthocyanin	-0.532	-0.681	-0.623	1.000