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Physicochemical Characteristics of *Rubus coreanus* Miquel leaves

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Objectives

The object of this research to physicochemical properties of *Rubus coreanus* Miquel leaves and the in order to develop the desert.

Materials and Methods

○ Materials

Leaves of *Rubus coreanus* Miquel collected in September 2010 in Hoengseong, Korea, were dried in the shade at room temperature and then powdered. The dried samples were weighed and kept in a refrigerator until further analysis.

○ Methods

- 1) AOAC Method : moisture, crude protein, crude fat, Total dietary fiber, crude ash, free sugar, mineral
- 2) Pico-Tag Method : amino acid
- 3) Cristin and Luh Method : Organic acid

Results

The purpose of this study is to determine the possibility of using *Rubus coreanus* Miquel leaves as natural health food source. To accomplish this purpose, the contents of general nutrients of *Rubus coreanus* Miquel leaves were measured. The contents of carbohydrate, crude protein, crude lipid and ash are 51.5%, 17.6%, 3.3% and 0.5%. And the calories of *Rubus coreanus* Miquel leaf was 268.7 Kcal. Total dietary fiber was 15.1% of total carbohydrates. The major free sugars of sample was glucose, fructose and sucrose. The protein were contained total 18 different kinds of amino acids. The Ca was the largest mineral followed by K, P and Mg, which means *Rubus coreanus* Miquel leaf was alkali material. Citric acid, succinic acid and fumaric acid were found in sample. The succinic acid showed the highest concentration in sample as the concentration 550.78 mg%. It is expected that follow up study of *Rubus coreanus* Miquel leaves through developing processed food and evaluation of their functional properties would provide useful information as a source of dessert.

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Table 1. Proximate compositions of the *Rubus coreanus* Miquel leaves

Nutrients	Contents	
Calories(Kcal)	268.7± 2.87	
General Nutrients (%)	Moisture	10.7 ± 2.14 ¹⁾
	Carbohydrate	51.5 ± 2.17
	Crude protein	17.6 ± 1.07
	Crude fat	3.3 ± 1.34
	Crude ash	0.5 ± 1.3.
Dietary fiber (%)	15.1 ± 2.97	

Values are mean ± S. E. Values are mean of triplicates.
1) Percentages of wet weight basis.

Table 2. The contents of minerals of the *Rubus coreanus* Miquel leaves

Mineral	Contents (mg/100g, wet weight basis)
Ca	815.8 ± 19.76
Mg	130.0 ± 15.42
Na	2.3 ± 7.99
K	543.3± 21.48
P	268.7 ± 5.37
Fe	7.6 ± 4.91
Zn	1.8 ± 2.87
Cu	0.7 ± 8.31
Mn	11.6 ± 1.02

Values are mean ± S. E. Values are mean of triplicates.

Table 3. The contents of free sugar of the *Rubus coreanus* Miquel leaves

Free sugar	Contents (g/100g)
Glucose	1.97 ± 0.73
Fructose	1.43 ± 0.05
Sucrose	0.71 ± 0.28
Maltose	ND ¹⁾
Lactose	ND ¹⁾

Values are mean ± S. E. Values are mean of triplicates.

1) ND : Not detect.

Table 4. The contents of amino acids in the *Rubus coreanus* Miquel leaves

Amino acid	Contents (mg/100 g, wet weight basis)
Asparagine	1,684.57± 94.21
Threonine*	766.51 ± 37.25
Serine	730.59 ± 34.37
Glutamic acid	2,067.80 ± 85.30
Proline	805.07 ± 17.51
Glycine	899.01 ± 15.47
Alanine	1,069.49 ± 29.11
Cystein	73.69 ± 0.57
Valine*	952.77 ± 36.47
Methionine*	179.93 ± 13.42
Isoleucine*	751.51 ± 38.24
Leucine*	1,414.82 ± 57.34
Tyrosine	501.80 ± 41.38
Phenylalanine*	945.54 ± 33.68
Histidine*	367.71 ± 15.97
Tryptophan*	157.30 ± 18.76
Lysine*	1,019.17 ± 27.45
Arginine	863.41 ± 32.04

Values are mean ± S. E. Values are mean of triplicates.

* : Essential amino acid

Table 5. The contents of organic acid of the *Rubus coreanus* Miquel leaves

Free sugar	Contents (mg/100g)
Citric acid	81.46 ± 0.73
Succinic acid	550.78 ± 0.05
Fumaric acid	48.31 ± 0.28

Values are mean ± S. E. Values are mean of triplicates.