

P.52 생육시기에 따른 콩 Isoflavones 농도의 변이

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Variation of soybean (*Glycine max*(L.) Merrill) Isoflavone concentration with Growth Stage

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OBJECTIVE

Soybean isoflavones concentration with growth stage was analyzed when the plant was divided two parts, leaves and stems. This study will provide the basic informations on the transformation of isoflavones from seed in planting date to seed in harvest time.

MATERIALS AND METHODS

- **Materials** : Leaves and stem of two cultivars, Jinpum2 and Puren, were analyzed with growth stage.

- **Methods** :

●. Isoflavones extraction for HPLC analysis

Soybean seeds, leaf ,and stem (2g) were mixed 2mL of 0.1N HCL and 10mL of acetonitrile, stirred for 2hrs at room temperature, and filtered through Whatman No. 42 filter paper. The filtrate was taken to dryness under vacuum a temperature below 30°C. The dried material was redissolved in 10mL of 80% HPLC grade MeOH in distilled H₂O.

●. HPLC analysis of Isoflavones

-**Mobile phase** :

Solvent A : 0.1% glacial acetic acid in distilled H₂O

Solvent B : 0.1% glacial acetic acid in acetonitrile

-**Column** : YMC-AM 303(ODS 4.6*250mm)

-**UV detector wavelength** : 254nm

RESULT

- The composition and concentration of isoflavones were significantly different between Jinpum2 and Puren with growth stage. Total isoflavones concentration in leaves is higher than in stem. Isoflavone contents in stem were only detected after 6th stage. With growth stage, concentration of aglycon group was decreased, while concentration of glycoside group including malonyl group was increased.

Table 1. Change of isoflavone concentration($\mu\text{g/g}$) in leaf of Jinpum2 with growth stage.

	DEIN	GEIN	GLYIEN	DIN	GIN	GLY	MDIN	MGIN	MGLY
SEED	24.5	-	-	633.49	614.11	312.08	1529.41	1616.14	20.74
1ST- LEAF	307.79	298.55	-	144.13	108.6	104.73	752.6	751.91	3.79
2TH-LEAF	285.45	-	-	14.9	1420.68	-	2592.7	147.91	-
3TH-LEAF	113.89	9.74	-	0	1467.79	-	2864.54	195.57	-
4TH-LEAF	100.83	23.09	-	10.25	1512.03	-	3074.87	83.22	-
5TH-LEAF	16.39	0.64	80.5	-	1459.8	-	2635.15	384.93	-
6TH-LEAF	26.62	2.54	46.5	15.15	1436.75	8.71	2940.21	243.08	-
7TH-LEAF	12.53	3.13	-	12.57	1485.9	15.89	2899.71	256.72	-
8TH-LEAF	7.68	34.71	-	9.96	1706.41	-	2702.16	232.48	-
9TH-LEAF	31.842	55.76	-	-	1619.73	-	2661.46	96.82	-
LSD (0.05)	127.81	25.71	86.008	32.12	66.52	24.21	80.34	110.03	8.7989
C.V. (%)	61.21	29.95	303.94	17.15	2.32	24.61	1.46	12.32	160.98

Table 2. Change of isoflavone concentration($\mu\text{g/g}$) in stem of Jinpum2 with growth stage.

	DEIN	GEIN	GLYIEN	DIN	GIN	GLY	MDIN	MGIN	MGLY
SEED	24.5	-	-	633.49	614.11	312.08	1529.41	1616.14	20.74
1ST- STEM	496.7	529.04	-	91.9	-	43.93	649.93	1387.88	3.79
2TH-STEM	-	-	-	3020.31	-	2045.46	815.44	565.45	-
3TH-STEM	-	-	-	-	-	-	-	-	-
4TH-STEM	-	-	-	473.88	-	593.93	225.67	472.52	-
5TH-STEM	-	-	-	341.3	-	-492.44	340.64	57.83	-
6TH-STEM	-	-	-	-	-	-	-	-	-
7TH-STEM	-	-	-	-	-	-	-	-	-
8TH-STEM	-	-	-	-	-	-	-	-	-
9TH-STEM	-	-	-	-	-	-	-	-	-
LSD (0.05)	35.56	35.87	0	409.34	19.02	495.2	442.17	125.56	8.8
C.V. (%)	30.62	30.44	0	40.28	13.9	63.72	35.31	13.74	190.3

Table 3. Change of isoflavone concentration($\mu\text{g/g}$) of three group in Jinpum2 with growth stage.

	Aglycon		Glucoside		Malonyl-group		Total	
	leaf	stem	leaf	stem	leaf	stem	leaf	stem
SEED	24.5		1559.68		3166.43		4750.6	
1st	606.34	1025.74	357.47	135.82	1507.52	2037.81	2471.33	3199.38
2nd	285.45	-	1435.58	5065.78	2740.62	1380.9	4461.64	6446.67
3th	129.63	-	1467.79	-	3060.12	-	4657.53	-
4th	123.92	-	1522.79	1067.81	3158.09	2725.19	4804.29	3793
5th	97.53	-	1459.8	833.74	3020.08	398.47	4577.41	1232.21
6th	75.66	-	1460.61	-	3183.29	-	4719.56	-
7th	15.66	-	1514.36	-	3156.43	-	4686.45	-
8th	42.39	-	1716.36	-	2934.64	-	4693.39	-
9th	87.6	-	1619.73	-	2758.28	-	4465.62	-
LSD (0.05)	162.64	69.26	99.28	858.37	165.17	543.19	162.77	1243
C.V. (%)	49.03	25.6	3.16	44.47	2.58	25.11	1.65	28.72