

## Isoflavones content in soybean and soybean milk in Rwanda

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The most important attribute of soybean is their health benefits due to protein and isoflavones that prevent and treat many chronic diseases<sup>(1)</sup>. Isoflavones found in soybean have anti-carcinogenetic activities, prevent cardio-vascular diseases, prevent osteoporosis, have antioxidant activities and alleviate menopausal symptoms<sup>(2)</sup>. The countries with highest consumption of phyto-estrogen (isoflavone and lignan) have low rate of breast cancer<sup>(3)</sup>. However there is limited information on isoflavones content in soybean produced in Rwanda. The study aimed to determine isoflavones content in soybean varieties grown in Rwanda and soybean milk processed using water extraction method<sup>(4)</sup>.

Isoflavones were determined in five varieties grown in South and Eastern zones using AOAC Official Method 2008-03<sup>(5)</sup>. Triplicates samples of soybean flour (N = 10) and soybean milk (N = 10) were used for study. The extracts analysed on a reverse-phase (C-18) UPLC with UV detection ( $\lambda_{nm} = 260$ ). The target analytes were aglycon isoflavones: Genistein and Daidzein, and their glucoside forms: Daidzin and Genistin.

Isoflavones content ( $\mu\text{g/g}$ ) in soybean flour

Sample	Daidzin	SD	Genistin	SD	Daidzein	SD	Genistein	SD	Total
PEKA6	918.7	58.0	1209.8	32.1	26.0	1.9	5.7	0.4	2160.2
SAGA	857.1	19.2	1114.4	38.8	9.0	0.3	7.1	0.5	1987.6
SEQUEL	843.0	57.5	1011.6	31.4	8.1	1.9	3.6	0.1	1866.2
SQUIRE	2296.3	196.7	2260.7	57.6	40.9	3.7	29.0	1.7	4627.0
SB24	1245.2	26.3	1004.6	34.7	15.1	0.9	7.4	1.3	2272.3
Isoflavones content ( $\mu\text{g/g}$ ) in soybean milk									
PEKA6	71.0	0.9	88.8	3.6	9.6	0.3	8.4	0.2	177.8
SAGA	61.0	6.3	81.7	8.8	8.8	1.0	11.3	0.8	162.8
SEQUEL	66.0	3.6	85.3	6.2	9.2	0.6	9.8	0.5	170.3
SQUIRE	117.1	2.4	124.4	4.6	18.1	0.7	17.8	0.3	277.5
SB24	76.7	11.0	54.2	6.4	6.1	0.8	3.1	0.4	140.1

The total isoflavones varied between 1866.2 and 4627.0  $\mu\text{g/g}$  in soybean flour and between 140.1 and 277.5  $\mu\text{g/g}$  for soybean milk. Squire variety had the highest isoflavone content with twice more than the other test varieties in both flour and milk. These findings will inform Rwandese breeders on how best to adjust their programs in order to improve the nutritional content of cultivated soybean and the Rwandan wellbeing.

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