

Fate of Seed-contained Isoflavones of Soybean during Germination and Seedling Growth

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Objective

The fate of seedisoflavones in soybean was traced based on the concentration of each isoflavone during germination and seedling growth for 7 days to know the nutraceutical value of soybean seedling like soy sprout. The levels of isoflavone in each plant part were measured to estimate the reconstitution of isoflavone components with respect to the effect of isoflavone in seedling on the attracting potential for rhizobium.

Materials and Methods

Plant material

Seeds of soybean (CV. Taekwangkong) were germinated in petri dish for 3 days and then transferred into tray packed with clean sand and grown for further 4 days at room temperature under light condition.

Methods

Thirty mg of ground powder from separated part was extracted with 80% ethanol and then hydrolyzed with 3M HCl after dry *in vacuo*. The solution was neutralized and subsequently filtered using membrane filter (25 μ m). The filtrate was injected into HPLC. The concentration of isoflavones was determined using standard curves of daidzein, genistein, and glycitein at 260nm.

Results and Discussion

- Isoflavones in soybean cotyledons were changed according to the elongation of epicotyl after epigeal germination. At this time, the content of lipid also drastically lowered.
- Among the isoflavone species in soybean, glycitein was completely disappeared as soon as the seed germinated. However, genistein concentration was steadily increased after germination until 7 days after imbibition. The concentration of daidzein was slightly increased
- Total isoflavone concentration in cotyledon was increased due to the reduction of dry weight. The concentration in hypocotyls showed quite high concentration as compared to that of other part.
- Daidzein and glycitein were highly concentrated in hypocotyls at 2.5 days after imbibition. These isoflavone species were specifically targeted to underground part reflecting the likelihood of attracting potential for rhizobium.

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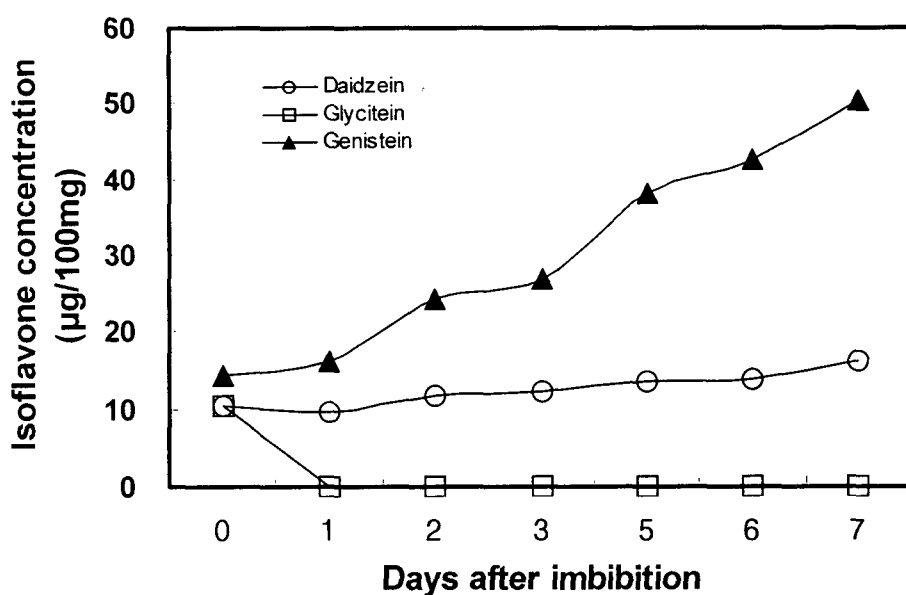


Fig. 1. Changes of isoflavone concentration in soybean seed during germination. Seeds were germinated in petri dish without water shortage at 25C.

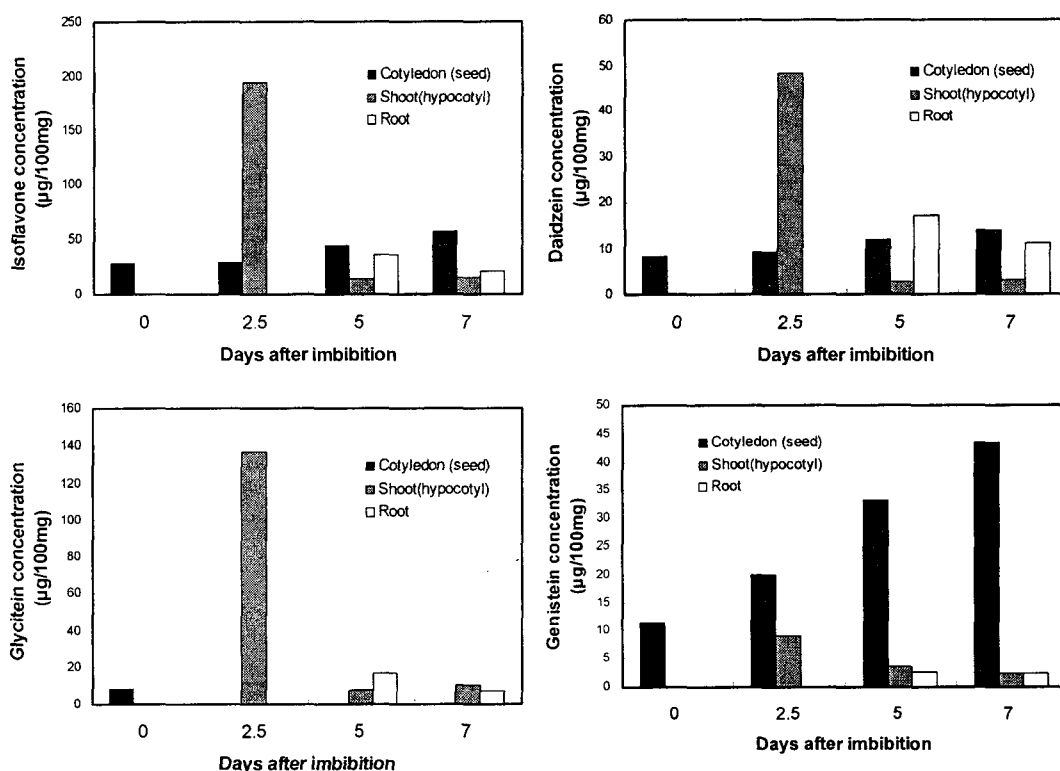


Fig. 2. Concentration of isoflavone in different part of soybean seedlings. Cotyledon at 0 day and shoot at 2.5 day indicates the seed and hypocotyls, respectively.