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PROFILE OF SOY ISOFLAVONES IN FOOD SUPPLEMENTS

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INTRODUCTION & AIM

Food supplement industry's ability to bring high-quality soy isoflavone-containing products to market is of particular importance for well-being of postmenopausal women, who utilize these products the most.

Supplement labels commonly contain only the total amount of **soy isoflavones** - actual isoflavone profile could influence the biological effects: isoflavone aglycones, glycitein, daidzein and genistein, do not have the same potency for binding to estrogen receptors, a step necessary for the manifestation of their activity.

METHOD

21 commercial supplements with soy extract, intended mostly for relief of menopausal symptoms.

Sample preparation: a portion equivalent to an average mass of 10 tablets/capsules measured from the pulverized material and extracted with 80% aq. methanol.

Analytical isoflavones profiling (daidzein, glycitein, genistein, as well as their glucosyl, acetyl, malonyl glycosides) by HPLC-DAD.

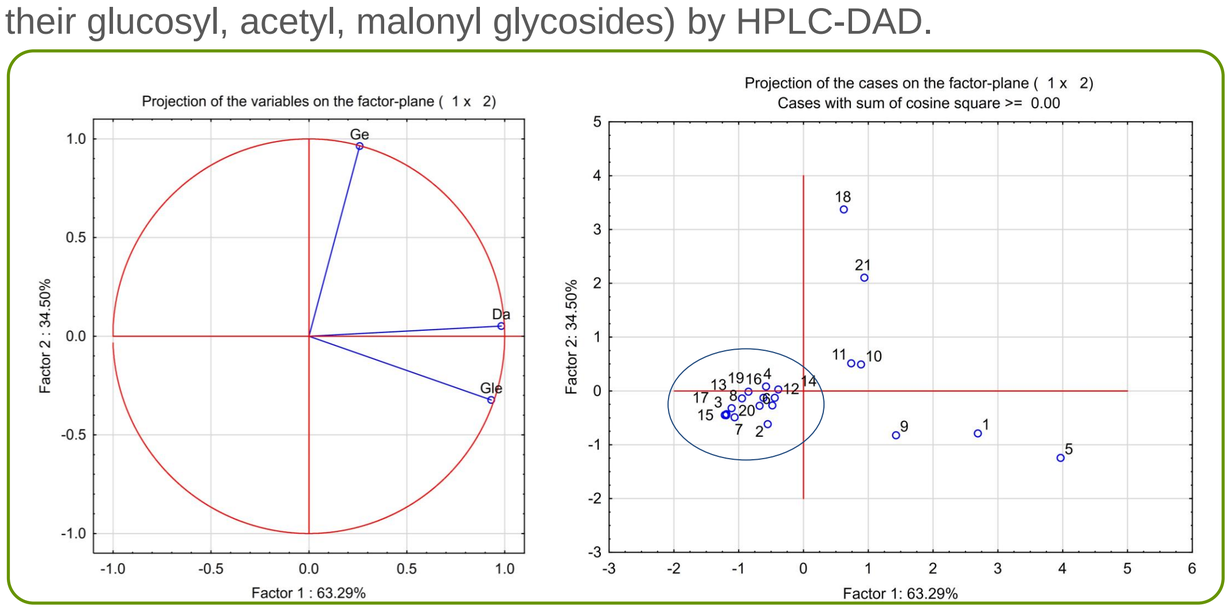

Figure 3. Principal component analysis

RESULTS & DISCUSSION

A broad range of total isoflavone content, 0.05-71.0 mg/dose unit expressed as total aglycone equivalents (mean value 20.4 mg/dose unit).

The total isoflavone content deviated from the labeled value less than ± 10 % in two supplements only, while the overall range of deviations was from -94.3 to +18.0%.

Isoflavone composition: genistein and daidzen, each with its glycosides, were on average equally abundant, participating with 43% of the total isoflavones, although the former showed greater variations in content (standard deviation 14 *vs.* 24%), while glycitein and its glycosides amounted for the remaining 14%.

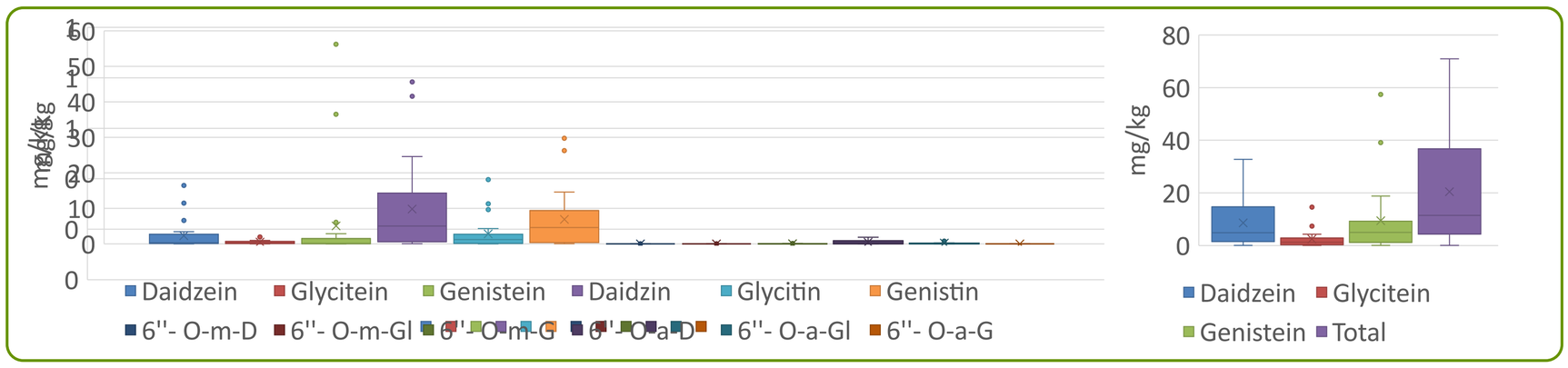

Figure 1. Box-Whisker plot of distribution of isoflavone (aglycone) concentrations in supplements (whiskers extend from min to max, □ interquartile range, – median, × mean)

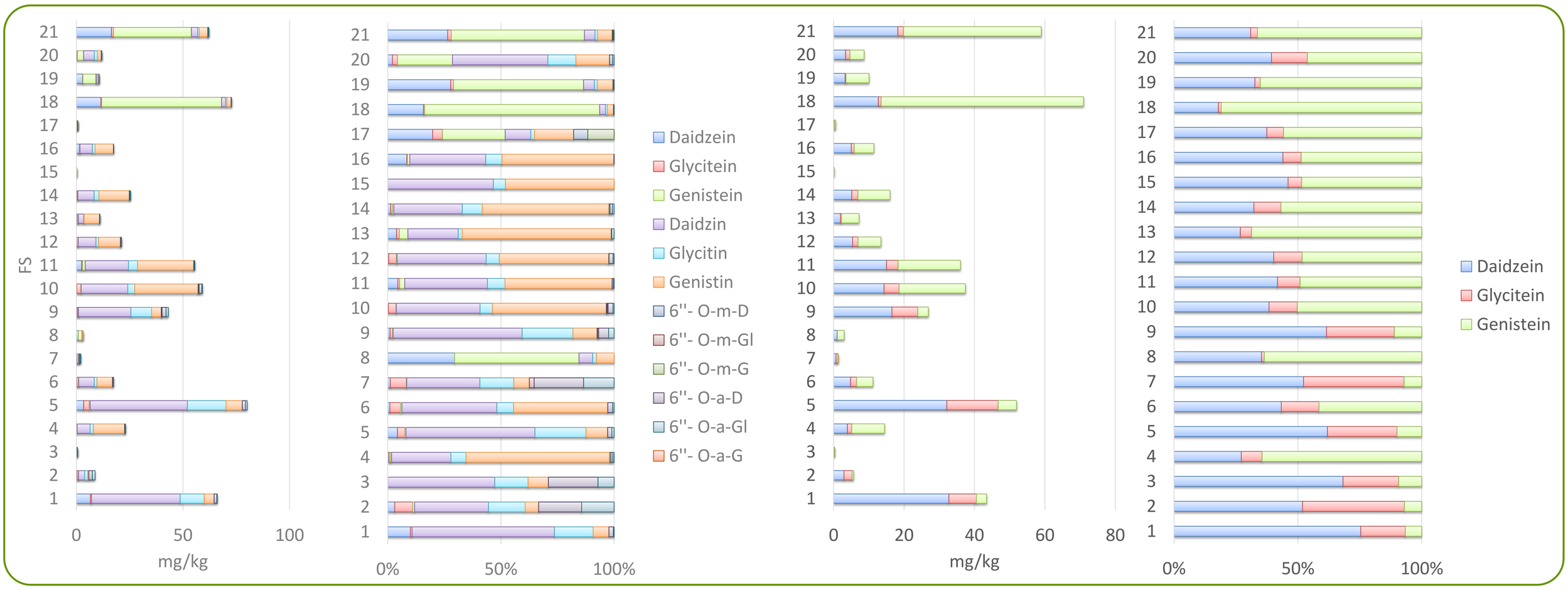

Figure 2. Mean content and composition of individual isoflavones in soy supplements (A) concentration, (B) % share in total isoflavones (m-malonyl, a-acetyl, D-daidzin, Gl-glycitin, G-genistin)

CONCLUSION

Quality of soy-based supplements varies greatly (amount of isoflavones, deviation from the labeled content, isoflavone profiles). A need for better control of the production process (plant extract standardization).

FUTURE WORK / REFERENCES

Assessment of human health benefit of soy isoflavones intake through soy supplements.