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**Correlations of tissue levels of soy isoflavones with 17beta-estradiol/estrone
ratio in human mammaplasty specimen**

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Level of 17beta-estradiol (E2) in human breast tissue is considered to affect breast cancer initiation, promotion and progression. Although putatively beneficial and adverse effects of soy isoflavones (IF) on the human mammary gland, in particular in Western women, have been discussed extensively, the influence of IF levels on estrogen formation in human mammary gland tissue has not been investigated yet.

Thus, glandular tissues were dissected from 37 mammaplasty specimen obtained from women (age 18-66 years old) not taking estrogen active drugs. 14 of these women had been exposed to IF by their usual diet or by intake of a soy-based dietary supplement for 7 days prior to mammaplasty. Information on soy consumption and lifestyle were collected by questionnaire and tissues were characterized histologically. Genistein, daidzein their conjugates (n=12) and bacterial metabolites (n=7) as well as the estrogens estrone (E1)-sulfate, E1, E2 and 2-methoxy-E1 were determined by UHPLC- and GC-MS/MS, respectively and transcript levels of 19 enzymes involved in E2 (biotrans)formation were quantified by TaqMan®-PCR in glandular tissues.

Isoflavonoids were categorized into the IF parameters aglycones (Agl) and conjugates (Con) of either genistein, daidzein or sum of both and were further statistically analyzed by Spearman's rank correlation analysis.

A positive correlation of E2/E1 ratio with Agl(+Con) was observed in glandular tissues (R=0.49, p=0.002), accompanied by a significant negative correlation of E1 levels with Agl (R=-0.35/p=0.032), possibly due to reduction of 17beta-hydroxysteroid dehydrogenase 2 (conversion of E2 to E1) expression as indicated by a weak negative correlation of transcript levels of 17beta-hydroxysteroid dehydrogenase 2 with Agl+Con (R=-0.25, p=0.080). Further statistical analysis taking into account multiple variables using linear regression models will provide more insights into variables affecting E1/E2 ratio.

Taken together, estrogen profile in human glandular breast tissue seems to be affected by IF levels. Supported by DFG Le-1329/10-1.