

**A discussion of association between the risks on breast and liver cancer for women
based on data given by age and period**

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In the previous experimental and epidemiological studies it has been accepted that, in the presence of estrogen, higher doses of dietary soy isoflavones may alter estrogen receptors signaling and induce selective antagonistic effects in the breast, that is, the risk of breast cancer death for women can be decreased by their isoflavone intake. On the other hand several researchers are issuing an alert that women who eat a lot of soybean products are three to four times more likely to develop liver cancer than those who eat only a small amount, that is, high isoflavone intake increases the risk of liver cancer for women. So our aim in this study is to exam such an association between the risks on breast and liver cancer for women from the analysis of nationwide census data. The result of fitting a model, which is an alternative to age-period-cohort model, to data for death of breast and liver cancer shows that there exist environmental factors which decrease the risk of breast cancer and increase the risk of liver cancer for women. This result may suggest the existence of effect of women's isoflavone intake on death of those two cancers on a nationwide scale.

Key words: Age-period-cohort model, effect of isoflavone intake, environmental factor