Reviewer's report

Title: Is peripubertal soy intake related to age at onset of menarche? A cross-sectional study among adolescents with a wide range of soy food consumption

Version: 1 Date: 10 March 2014

Reviewer: Danxia Yu

Reviewer's report:

The authors aimed to examine whether peripubertal soy intake was associated with age at menarche among 327 adolescent US girls who had relatively high levels of soy consumption. Information on diet, age at menarche, and demographic characteristics was collected by using a web-based questionnaire, which has been evaluated and shown a high validity. No association was found between soy intake and age at menarche in the present analyses.

Since soy foods have become increasingly popular in recent decades, the question posed by the authors is interesting and important. The data were collected and analyzed properly and manuscript was written well and clearly. My major comments are about the “cross-sectional” design, adjustment for BMI, association for isoflavones, and statistical power.

Major Compulsory Revisions:

1. Study design. Current soy consumption (later than outcome) was assessed instead of interested exposure at peripubertal period. Although authors argued that the diet remained stable during adolescence, some studies reported food choices changed when adolescents entered late puberty and had more autonomy, including increased intake of soft drinks and fast foods while decreased intake of vegetables and fruits. Their response to FFQ survey may also have changed.

2. BMI adjustment. Body weight/fat is closely associated with food intake and menarche and may be a mediator. It is better to present results with and without BMI adjustment. Also BMI, through influencing endogenous hormonal level, may act jointly/oppositely with phytoestrogen intake, thus an interaction term may be considered. And, age-standardized BMI z score or percentile for teen girls should be used.

3. Isoflavones intake. Soy foods have various content of isoflavones, thus isoflavones intake may be different even total soy intake is similar. This is important if isoflavones are considered the key component of soy to exert estrogen/anti-estrogen effects. What is the association between isoflavones intake and age at menarche in this study?

4. What is the statistical power in current study to detect significant difference in age at menarche? Is null association due to insufficient sample size?

5. Line 256: “Our study is the first one that.....” Previous studies have reported
soy foods/isoflavones intake in relation to age at menarche. For example, Guo Cheng et al. (Am J Clin Nutr 2010;92) found that higher isoflavones intake was associated with later puberty, although association with age at menarche was not significant. Phytoestrogens may act as agonists or antagonists on estrogen receptor. The authors should discuss both sides of evidence in the introduction and discussion.

Minor Essential Revisions:
1. Since current dietary intake was analyzed, please limit using “peripubertal”, especially in the title/abstract and conclusion.
2. What about the association stratified by site, mom’s education, and ethnicity?
3. Is the association changed by further adjustment for other dietary factors that may be confounding, e.g. added sugar, dairy?

Discretionary Revisions:
1. Table 3 and 4: what are the median levels of soy consumption and age at menarche in each quartile?

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.