Author’s response to reviews

Title: The Association of vitamin D status and fasting glucose according to body fat mass in young healthy Thais

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Author’s response to reviews: see over
The Association of vitamin D status and fasting glucose according to body fat mass in young healthy Thais
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We thank Reviewer I for the instructive comment and suggestion.

Responses to Reviewer II comments

Reviewer's report
Title: The Association of vitamin D status and fasting glucose according to body fat mass in young healthy Thais.
Version: 1 Date: 25 September 2013
Reviewer: Michael Holick

Reviewer's report:
1. The authors have nicely documented vitamin D status in a working environment in Thailand demonstrating significant vitamin D deficiency. It is however unclear how meaningful the conclusion is regarding vitamin D status and fasting blood glucose levels since there was a positive association only in the group that had the lowest 25-hydroxyvitamin D levels. This could be simply a statistical fluke rather than being physiologically meaningful.
   - Were these blood samples taken at the same time of the year? Was there a seasonal variation in 25-hydroxyvitamin D levels and more importantly fasting blood glucose levels?
   Yes, these blood samples were drawn at the same time of the year. Therefore, a seasonal variation in 25(OH)D levels should not be concerned in this study. Nevertheless, we previously reported that mean 25(OH)D level from blood samples obtained in the rainy season was the lowest and was significantly different from those collected in winter and summer[1]. There is no report about seasonal variation in FPG levels in Thai.

2. There is a wide range for BMI. Since the authors have a relatively large number of subjects it would be of interest to plot BMI with 25-hydroxyvitamin D and fasting blood glucose.
   Thank you for your suggestion. Scatter plots of FPG vs. total 25(OH)D according to body fat mass tertiles have been added in figure in the manuscript, as shown as the following.
Figure Scatter plots of fasting plasma glucose and total 25(OH)D according to body fat mass tertiles.

The 1\textsuperscript{st} tertile (n=674)

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{1st_tertile}
\caption{Scatter plot for the 1\textsuperscript{st} tertile.}
\end{figure}

The 2\textsuperscript{nd} tertile (n=664)

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{2nd_tertile}
\caption{Scatter plot for the 2\textsuperscript{nd} tertile.}
\end{figure}

The 3\textsuperscript{rd} tertile (n=652)

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{3rd_tertile}
\caption{Scatter plot for the 3\textsuperscript{rd} tertile.}
\end{figure}
3. It is doubtful that this study is contrary to most studies regarding vitamin D status and diabetes since having a higher fasting blood glucose in the normal range is not necessarily related to increased risk for type 2 diabetes. 

We agreed with this comment as we discussed in the discussion part (line 198-199).

- This needs further explanation.

The mechanistic underlined this finding is beyond the scope of our study. We could only hypothesized that these relatively young population (mean age of 40 years) might have higher amount of brown adipose tissue. Then vitamin D may have a greater influence in inhibiting the function of brown adipose tissue rather than in inhibiting lipogenesis and its metabolic consequences in white adipose tissue (line 193-196).

- Did the authors observe higher blood sugar levels in subjects who had metabolic syndrome or type 2 diabetes? Were they excluded from this study? 

Unfortunately, we did not have data about previous history of diabetes or measurements for metabolic syndrome in our subjects. We added this limitation in our discussion part. Nonetheless, statistical analysis which including or excluding subjects who had FPG $\geq$ 7 mmol/L (126mg/dL) provided the same results (line 208-210).

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests

Reference