Reviewer’s report

Title: Changes in the vitamin D endocrine system and bone turnover after oral vitamin D3 supplementation in healthy adults: Results of a randomised trial

Version: 1 Date: 12 December 2011

Reviewer: Julie Wallace

Reviewer’s report:

The authors have submitted a manuscript on a study which investigated the effect of vitamin D provided in two different forms on vitamin D related measures. Given the heightened interest in vitamin D and its associated health outcomes the manuscript is timely. Overall the manuscript is well written and includes relevant and up to date references to set the scene for the work. I have a number of queries which I feel the authors should address to improve the quality of the paper.

Major revisions

In the background section, the authors refer to healthy vitamin D status (line 13) what is healthy?

Line 15 the authors state that 12.5 ug of vitamin D are required to maintain vitamin D status in wintertime…. To maintain it at what level?

Were the data normally distributed? If not it may be better to present median or geometric mean and analysis should be on transformed data. The statistical analysis should be reconsidered. Rather than using t-tests it would be much better to use an ANCOVA and thereby analyse all the data together to look for between and within group changes.

Was #25(OH)D associated with #1,25 or #PTH or indeed change in any other biochemical markers. I think that a lot of table 3 could be omitted and the significant findings reported in the text.

Page 11 line 18 states that lower age was a significant predictor of a larger increase in 1,25, but this does not appear significant in the table.

The authors should remove reference to trends in the data.

The authors should comment on other possible nutrient effects, both supplements contained vitamin A, could this have had an impact on bone turnover?

Minor revisions

Vitamin D status appears quite good for a population who have been in the dark in terms of vitamin D synthesis for a number of months. Were individuals who went on holidays to sunny destinations included in the intervention?
Can the authors confirm from previous research that a four week intervention is sufficient to observe changes in bone turnover markers.

Discretionary Revisions
Reconsider the need for all tables and graphs and revise accordingly

**Level of interest**: An article whose findings are important to those with closely related research interests

**Quality of written English**: Acceptable

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