Reviewer’s report

Title: Tocotrienols are less preferentially circulated in plasma and lipoproteins compared to alpha-tocopherol after a postprandial tocotrienol-rich vitamin E challenge

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Reviewer: Paul Sylvester

Reviewer’s report:

Reviewer’s Comments: The potent biological effects of tocotrienols have been demonstrated in numerous in vitro model systems. However, these effects have been difficult to reproduce when studies were repeated in laboratory animal or human studies. The reason for this discrepancy between in vitro and in vivo studies appears to be due to the preferential way that the body absorbs and transports #-tocopherol versus tocotrienols. As a result, #-tocopherol has a much greater bioavailability than tocotrienols. The present manuscript conducted a study to directly compare the levels of #-tocopherol and various isoforms of tocotrienols in the plasma and plasma lipids following a signal dose of #-tocopherol versus TRF in healthy humans. Results showed that neither treatment had a significant effect on circulating lipids levels. However, results did show that greater levels of #-tocopherol peaked in the blood as compared to tocotrienol and plasma lipids also displays a time-dependent increase following #-tocopherol administration. In contrast, plasma lipid concentrations of tocotrienol increased only slightly following TRF administration. These results confirm that #-tocopherol is preferentially absorbed from the gut and enters the circulation to a greater extent than tocotrienols. However, the present study extends the findings of previous investigations by demonstrating that #-tocopherol is also preferentially packaged into all the various forms of plasma lipids. These results provide insights as to why biological activity of tocotrienols in vitro has been difficult to repeat in vivo. In general, the findings of this manuscript are novel and provide new information regarding bioavailability of tocotrienols in humans. Therefore, this reviewer recommends that this manuscript be accepted for publication in the Nutrition Journal without revision.

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