Effect of dietary vitamin D3 and 25-hydroxyvitamin D3 supplementation on plasma and milk 25-hydroxyvitamin D3 concentration in dairy cows

Article

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Letter to Editor


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Reply to the Letter to the Editor for “A 25-hydroxycholecalciferol-fortified dairy drink is more effective at raising a marker of postprandial vitamin D status than cholecalciferol in men with suboptimal vitamin D status.” (Manuscript doi: 10.3945/jn.117.254789) by Jing Guo, Kim G Jackson, Che Suhaill binti Che Taha, Yue Li, David I Givens, and Julie A Lovegrove

We thanks Dr Thomas R Hill and Dr Ilia Kyriazakis for their comments and feedback on our article.

We agreed to derive vitamin D enriched foods by ‘biofortification’ via adding vitamin D supplements to the diet of animal is practice and possible. Our recently review article (1) has summarised previous vitamin D biofortified studies on eggs and milk and found most of vitamin D biofortified studies have higher vitamin D dose than EU diet limit (1, 3). Furthermore, there are few human randomised controlled trial on the effect of those vitamin D enriched foods on the human vitamin D status. In addition, our lab work (4) by adding vitamin D3 maximum dose within the EU diet limit (2) into dairy cows’ diet and showed negligible increased of vitamin D (vitamin D3 and 25(OH) D3) in the milk produciton. Therefore, vitamin D fortified milk by adding vitamin D supplement directly into milk are needed rather than biofortified milk.

Current finding of ‘dairy drink fortified with 25(OH) D3 was more effective at raising plasma 25(OH) D3 concentrations than dairy drink fortified with vitamin D3 in men with suboptimal vitamin D status’ agreed with previous studies (5, 6), which may indicates the potential application of enriched foods with 25(OH) D3, although long-term intervention period is needed to confirm the effect of 25(OH) D3 fortified dairy drinks on human vitamin D status. Furthermore, different vitamin D fortified food are needed to accommodate dietary
diversity (7), thus, future studies are needed to investigate the effect of other foods fortified with 25(OH) D₃ compared with vitamin D₃ on human vitamin D status.

References

1. Guo J, Lovegrove JA, Givens DI. 25(OH) D₃ enriched or fortified foods are more efficient at tackling inadequate vitamin D status than vitamin D₃. Proc Nutr Soc. 2017 [Accepted and in press].

2. EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed) (2012). Scientific Opinion on the safety and efficacy of vitamin D₃ (cholecalciferol) as a feed additive for chickens for fattening, turkeys, other poultry, pigs, piglets (suckling), calves for rearing, calves for fattening, bovines, ovines, equines, fish and other animal species or categories, based on a dossier submitted by DSM. EFSA J 10, 2968, 26 pp.


