Lower cathelicidin concentrations in Irish athletes compared to controls: a role for vitamin D?

J.J. Todd¹, E.M. McSorley¹, L.K. Pourshahidi¹, S.M. Madigan², E. Laird³, R.R. Weir¹, M. Healy⁴, M.B.E. Livingstone¹, C. Beggan¹, L. Beggan¹ and P.J. Magee¹

¹Northern Ireland Centre for Food and Health, Ulster University, Coleraine, BT52 1SA, ²Irish Institute of Sport, Sports Campus Ireland, Abbotstown, Dublin, Republic of Ireland, ³School of Medicine, Trinity College Dublin, Republic of Ireland and ⁴Department of Biochemistry, St. James’ Hospital, Dublin, Republic of Ireland

Despite strong *in vitro* evidence supporting pleiotropic actions of vitamin D in the immune system¹, including synthesis of LL-37 antimicrobial peptide², human studies have yielded inconsistent results. LL-37 has been linked with total 25-hydroxyvitamin D [25(OH)D] concentrations and the number of self-reported upper respiratory tract infection symptoms in endurance athletes³. This observational study investigated whether LL-37 concentration varied between athletes and a general population control group and also tested if total 25(OH)D was a positive predictor of LL-37 concentration.

Overall, 221 stored plasma samples from male and female athletes (*n* 101) and a healthy control group (*n* 120) were obtained from four previous studies and analysed for LL-37 using an ELISA. Total 25(OH)D concentration was quantified by LC-MS/MS during each original study. Prior to statistical analyses, outliers (*n* = 24) were removed.

Athletes had a significantly lower mean LL-37 concentration than controls. In contrast, the athlete group exhibited a higher mean total 25(OH)D concentration compared to the control group. Total 25(OH)D concentration did not predict LL-37 concentration overall (β = 0.073, *P* = 0.386), or in either group after adjusting for age, sex, BMI and season of sampling (athletes β = −0.033, *P* = 0.762; controls β = 0.145, *P* = 0.197). These findings question the purported link between vitamin D and LL-37 *in vivo*. Although significantly lower LL-37 concentrations were observed in athletes compared to controls, the clinical implications of this disparity require further investigation.

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