**Supplemental Data**

Effect of vitamin D supplementation on iron and vitamin D status biomarkers at 3 time points over the 8-weeks intervention period

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Groups** | **Baseline**  **(n=50)** | | | **Interim**  **(n=46)** | | | **Post-intervention**  **(n=44)** | | **Time**  **(p-value)** | **Time x Group**  **(p-value)** |
|  |  | Mean | SD | Mean | | SD | Mean | | SD |  |  |
| **Hb (g/L)** | Vitamin D | 136 | 12**a** | 136 | | 11 | 138 | | 10**b** | <0.05 | **\*0.037** |
|  | Placebo | 132 | 15 | 131 | | 11 | 128 | | 13 | NS |  |
| **Hct (%)** | Vitamin D | 42.5 | 3.2**a** | 42.7 | | 3.2**a** | 43.8 | | 3.4**b** | <0.05 | **\*0.032** |
|  | Placebo | 41.3 | 4.2 | 41.2 | | 3.0 | 40.7 | | 3.6 | NS |  |
| **RBC (x1012/L)** | Vitamin D | 4.6 | 0.3**a** | 4.7 | | 0.3 | 4.8 | | 0.3**b** | <0.001 | 0.055 |
|  | Placebo | 4.6 | 0.4 | 4.6 | | 0.3 | 4.6 | | 0.3 | NS |  |
| **MCV (fL)** | Vitamin D | 92.0 | 5.8 | 91.3 | | 4.3 | 91.9 | | 5.7 | NS | 0.190 |
|  | Placebo | 90.0 | 7.5 | 90.2 | | 7.8 | 89.0 | | 7.8 | NS |  |
| **MCH (pg)** | Vitamin D | 29.4 | 2.0 | 29.3 | | 1.8**a** | 29.1 | | 1.9**b** | <0.05 | 0.328 |
|  | Placebo | 28.7 | 3.0**a** | 28.7 | | 3.0**a** | 28.1 | | 3.0**b** | <0.0001 |  |
| **MCHC (g/L)** | Vitamin D | 320 | 8**a** | 320 | | 8**a** | 316 | | 10**b** | <0.05 | 0.425 |
|  | Placebo | 319 | 11 | 317 | | 10 | 315 | | 11 | NS |  |
| **Fer (µg/L)** | Vitamin D | 14.1 | 7.7 | 13.9 | | 9.6 | 16.0 | | 10.8 | NS | 0.890 |
|  | Placebo | 12.4 | 8.0 | 12.6 | | 8.8 | 13.8 | | 13.3 | NS |  |
| **Hep (x103ng/L)** | Vitamin D | 4.2 | 5.7 | 2.9 | | 2.6 | 4.1 | | 4.1 | NS | 0.941 |
|  | Placebo | 2.9 | 2.2 | 3.1 | | 2.8 | 3.4 | | 5.6 | NS |  |
| **sTfR (mg/L)** | Vitamin D | 1.5 | 0.7 | 1.7 | | 0.9 | 1.8 | | 1.0 | NS | 0.625 |
|  | Placebo | 1.9 | 1.2 | 1.9 | | 1.3 | 2.0 | | 1.4 | NS |  |
| **CRP (mg/L)** | Vitamin D | 2.3 | 2.6 | 1.5 | | 1.9 | 2.8 | | 3.2 | NS | 0.642 |
|  | Placebo | 3.0 | 3.3 | 3.0 | | 3.6 | 3.2 | | 3.8 | NS |  |
| **25(OH)D (nmol/L)** | Vitamin D | 35.0 | 19.8**aΨ** | 56.0 | | 11.0**bΨ** | 62.2 | | 16.13**bΨ** | <0.0001 | 0.0001 |
|  | Placebo | 38.6 | 27.2**aΨ** | 38.3 | | 27.1**aΨ** | 34.2 | | 23.6**bΨ** | NS |  |
| **PTH (pmol/L)** | Vitamin D | 7.8 | 8.1**a** | 6.8 | | 7.0**b** | 7.2 | | 7.8**b** | <0.05 | 0.198 |
|  | Placebo | 7.6 | 4.4 | 6.8 | | 3.1 | 7.6 | | 3.7 | NS |  |
| **VDBP (x103µg/L)** | Vitamin D | 307.8 | 135.8 | 272.3 | | 90.1 | 289.1 | | 118.7 | NS | 0.413 |
|  | Placebo | 367.4 | 144.8 | 368.5 | | 131.6 | 382.7 | | 138.1 | NS |  |

Hb, haemoglobin; Hct, haematocrit; RBC, red blood cells; MCV, mean corpuscular volume; MCH, mean corpuscular haemoglobin; MCHC, mean corpuscular haemoglobin concentration; Fer, ferritin; Hep, hepcidin; sTfR, soluble transferrin receptor; 25(OH)D, 25-hydroxy vitamin D; PTH, parathyroid hormone; VDBP, vitamin D binding protein.

Values are significantly different at specified time points if not sharing a common letter in the same row.

Values are significantly different between groups (vitamin D and placebo) if sharing a common symbol in the same column.

Mixed model repeated measures ANOVA was performed to determine the effect of intervention and the interaction with time points for all iron status and vitamin D status blood biomarkers. Post-hoc analyses were carried out when intervention × time point interactions were observed, to identify the differences within or between the groups.