**Table 1** – Unadjusted calcaneal BUA of 6490 men and 8313 women from the EPIC-Norfolk cohort, stratified by sex and dietary intake quintiles of specific carotenoids or retinol.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Men** | **Dietary carotenoid intake** | | | | | |  |
|  | **Total** | **Quintile 1** | **Quintile 2** | **Quintile 3** | **Quintile 4** | **Quintile 5** |  |
|  | **n=6490** | **n=1298** | **n=1298** | **n=1298** | **n=1298** | **n=1298** | **P for trend** |
| Alpha-carotene (g/day) | 90.1 ± 17.5 | 90.0 ± 17.2 | 89.7 ± 17.4 | 90.3 ± 17.7 | 89.8 ± 17.6 | 90.4 ± 17.7 | 0.587 |
| Beta-carotene (g/day) | 90.1 ± 17.5 | 89.3 ± 17.2 | 89.9 ± 17.5 | 90.6 ± 17.7\* | 90.9 ± 17.3\* | 89.6 ± 17.9 | 0.520 |
| Beta-cryptoxanthin (g/day) | 90.1 ± 17.5 | 89.9 ± 17.9 | 89.5 ± 17.5 | 89.4 ± 17.6 | 90.6 ± 17.0 | 90.9 ± 17.5 | 0.019 |
| Lutein & zeaxanthin (g/day) | 90.1 ± 17.5 | 89.1 ± 17.0 | 89.9 ± 17.8 | 89.9 ± 17.5 | 90.8 ± 17.2\* | 90.6 ± 18.1\* | 0.027 |
| Lycopene (g/day) | 90.1 ± 17.5 | 89.4 ± 18.2 | 90.3 ± 17.5 | 90.2 ± 16.9 | 90.2 ± 17.3 | 90.2 ± 17.7 | 0.468 |
| Retinol (g/day) | 90.1 ± 17.5 | 90.0 ± 17.9 | 89.7 ± 18.0 | 90.3 ± 17.4 | 90.6 ± 17.3 | 89.7 ± 17.0 | 0.569 |
| **Women** |  |  | | | | |  |
|  | **n=8313** | **n=1663** | **n=1663** | **n=1662** | **n=1663** | **n=1662** | **P for trend** |
| Alpha-carotene (g/day) | 72.1 ± 16.5 | 71.6 ± 17.0 | 71.5 ± 16.0 | 72.3 ± 16.3 | 72.2 ± 16.2 | 72.7 ± 16.8 | 0.032 |
| Beta-carotene (g/day) | 72.1 ± 16.5 | 70.9 ± 16.2 | 72.0 ± 16.4 | 72.1 ± 16.4\* | 72.2 ± 16.5\* | 73.1 ± 16.9\*\*\* | 0.001 |
| Beta-cryptoxanthin (g/day) | 72.1 ± 16.5 | 71.0 ± 16.5 | 71.6 ± 17.0 | 72.1 ± 16.4 | 72.6 ± 16.3\*\* | 73.0 ± 16.1\*\*\* | <0.001 |
| Lutein & zeaxanthin (g/day) | 72.1 ± 16.5 | 70.4 ± 16.4 | 71.8 ± 16.5\* | 72.2 ± 16.1\*\* | 73.5 ± 16.3\*\*\* | 72.4 ± 17.0\*\* | 0.001 |
| Lycopene (g/day) | 72.1 ± 16.5 | 70.1 ± 16.2 | 70.5 ± 16.6 | 72.2 ± 16.4\*\*\* | 73.3 ± 16.1\*\*\* | 74.3 ± 16.8\*\*\* | <0.001 |
| Retinol (g/day) | 72.1 ± 16.5 | 72.6 ± 17.0 | 72.6 ± 16.6 | 71.9 ± 16.4 | 72.1 ± 16.1 | 71.0 ± 16.3\*\* | 0.002 |

Data as mean ± SD. \* p<0.05; \*\* p<0.01; \*\*\* p<0.001 *vs.* Quintile 1, according to ANCOVA.

**Table 2** – Unadjusted calcaneal BUA of 2362 men and 2208 women from the EPIC-Norfolk cohort, stratified by sex and plasma concentration quintiles of specific carotenoids or retinol.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Men** | **Plasma carotenoid concentration** | | | | | | |  |
|  | **Total** | **Quintile 1** | **Quintile 2** | **Quintile 3** | **Quintile 4** | **Quintile 5** |  | |
|  | **n=2362** | **n=473** | **n=472** | **n=473** | **n=472** | **n=472** | **P for trend** | |
| Alpha-carotene (g/dL) | 89.5 ± 17.8 | 88.9 ± 18.2 | 89.5 ± 17.1 | 89.7 ± 17.4 | 89.5 ± 18.0 | 89.8 ± 18.2 | 0.555 | |
| Beta-carotene (g/dL) | 89.5 ± 17.8 | 88.8 ± 17.7 | 89.4 ± 17.5 | 88.8 ± 16.8 | 90.3 ± 18.1 | 89.9 ± 18.8 | 0.247 | |
| Beta-cryptoxanthin (g/dL) | 89.5 ± 17.8 | 88.5 ± 18.1 | 89.2 ± 17.4 | 90.4 ± 17.5 | 89.4 ± 18.0 | 89.8 ± 17.9 | 0.407 | |
| Lutein & zeaxanthin (g/dL) | 89.5 ± 17.8 | 88.3 ± 17.5 | 90.8 ± 17.4\* | 89.2 ± 17.9 | 89.2 ± 18.1 | 89.8 ± 17.9 | 0.568 | |
| Lycopene (g/dL) | 89.5 ± 17.8 | 88.5 ± 17.8 | 89.0 ± 17.5 | 89.0 ± 17.3 | 89.7 ± 17.6 | 91.1 ± 18.5\* | 0.015 | |
| Retinol (g/dL) | 89.5 ± 17.8 | 88.8 ± 17.8 | 88.9 ± 17.7 | 90.8 ± 17.8 | 88.9 ± 17.8 | 89.9 ± 17.6 | 0.357 | |
| **Women** |  |  | | | | |  | |
|  | **n=2208** | **n=442** | **n=442** | **n=441** | **n=442** | **n=441** | **P for trend** | |
| Alpha-carotene (g/dL) | 69.8 ± 16.2 | 69.6 ± 16.8 | 70.3 ± 16.0 | 69.0 ± 15.8 | 70.5 ± 16.5 | 69.6 ± 16.0 | 0.939 | |
| Beta-carotene (g/dL) | 69.8 ± 16.2 | 71.4 ± 16.5 | 71.1 ± 15.8 | 70.4 ± 16.4 | 68.6 ± 16.0\*\* | 67.4 ± 16.1\*\*\* | <0.001 | |
| Beta-cryptoxanthin (g/dL) | 69.8 ± 16.2 | 69.7 ± 16.8 | 70.1 ± 17.4 | 69.3 ± 16.5 | 70.1 ± 15.6 | 69.8 ± 14.7 | 0.919 | |
| Lutein & zeaxanthin (g/dL) | 69.8 ± 16.2 | 71.1 ± 16.2 | 70.1 ± 17.0 | 70.7 ± 16.0 | 68.5 ± 16.0\* | 68.6 ± 15.7\* | 0.008 | |
| Lycopene (g/dL) | 69.8 ± 16.2 | 67.2 ± 16.3 | 68.6 ± 16.4 | 69.3 ± 15.8\* | 72.3 ± 15.8\*\*\* | 71.6 ± 16.2\*\*\* | <0.001 | |
| Retinol (g/dL) | 69.8 ± 16.2 | 70.7 ± 17.2 | 70.1 ± 16.4 | 68.2 ± 15.4\* | 69.7 ± 16.1 | 70.3 ± 15.9 | 0.781 | |

Data as mean ± SD. \* p<0.05; \*\* p<0.01; \*\*\* p<0.001 *vs.* Quintile 1, according to ANCOVA.