**Supplemental Table 1: Comparison of the dietary anthocyanidins intake by the quartile of the body composition at multi-sites.**

|  |  |  |
| --- | --- | --- |
|  | Quartile of body composition |  |
|  | Q1 | Q2 | Q3 | Q4 | P-value a |
| Whole body FM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.36 ± 3.99 | 7.16 ± 4.52 | 6.90 ± 3.82 | 6.09 ± 3.83 | 0.096  |
|  Delphinidin, mg/d b | 0.67 ± 0.49 | 0.59 ± 0.44 | 0.54 ± 0.39 | **0.50 ± 0.39\*** | **0.019**  |
|  Cyanidin, mg/d b | 5.80 ± 3.97 | 5.62 ± 3.97 | 5.37 ± 3.32 | 4.65 ± 3.42 | 0.082  |
|  Peonidin, mg/d b | 0.93 ± 0.58 | 0.96 ± 0.82 | 0.96 ± 0.70 | 0.92 ± 0.78 | 0.963  |
| Whole body LM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 6.73 ± 3.90 | 7.02 ± 4.20 | 6.65 ± 3.89 | 7.11 ± 4.29 | 0.796  |
|  Delphinidin, mg/d b | 0.58 ± 0.36 | 0.61 ± 0.53 | 0.52 ± 0.33 | 0.60 ± 0.50 | 0.369  |
|  Cyanidin, mg/d b | 5.89 ± 3.57 | 5.44 ± 3.60 | 5.23 ± 3.55 | 5.48 ± 3.74 | 0.944  |
|  Peonidin, mg/d b | 0.90 ± 0.63 | 0.98 ± 0.77 | 0.91 ± 0.78 | 0.99 ± 0.71 | 0.709  |
| Whole body FMP |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.56 ± 4.01 | 7.02 ± 4.05 | 6.97 ± 4.44 | **5.96 ± 3.62\*** | **0.027**  |
|  Delphinidin, mg/d b | 0.66 ± 0.49 | 0.63 ± 0.44 | **0.50 ± 0.38\*** | 0.52 ± 4.05 | **0.008**  |
|  Cyanidin, mg/d b | 5.98 ± 3.45 | 5.42 ± 3.80 | 5.52 ± 3.92 | **4.51 ± 3.09\*** | **0.019**  |
|  Peonidin, mg/d b | 0.94 ± 0.61 | 0.98 ± 0.73 | 0.95 ± 0.82 | 0.91 ± 0.72 | 0.922  |
| Trunk FM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.72 ± 4.30 | 6.96 ± 4.25 | 6.59 ± 3.60 | **6.24 ± 3.98\*** | **0.040**  |
|  Delphinidin, mg/d b | 0.68 ± 0.48 | 0.58 ± 0.43 | 0.53 ± 0.41 | **0.52 ± 0.40\*** | **0.018**  |
|  Cyanidin, mg/d b | 6.15 ± 3.97 | 5.38 ± 3.62 | 5.16 ± 3.18 | **4.75 ± 3.52\*** | **0.029**  |
|  Peonidin, mg/d b | 0.95 ± 0.61 | 1.00 ± 0.93 | 0.87 ± 0.49 | 0.95 ± 0.79 | 0.587  |
| Trunk LM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 6.84 ± 4.35 | 7.17 ± 3.87 | 6.24 ± 3.74 | 7.25 ± 4.24 | 0.221  |
|  Delphinidin, mg/d b | 0.59 ± 0.41 | 0.63 ± 0.48 | 0.49 ± 0.33 | 0.60 ± 0.49 | 0.113  |
|  Cyanidin, mg/d b | 5.40 ± 3.86 | 5.60 ± 3.44 | 4.83 ± 3.36 | 5.60 ± 3.74 | 0.326  |
|  Peonidin, mg/d b | 0.89 ± 0.62 | 0.96 ± 0.64 | 0.90 ± 0.80 | 1.02 ± 0.81 | 0.514  |
| Trunk FMP |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.66 ± 4.34 | 7.20 ± 3.67 | 6.65 ± 4.38 | **6.00 ± 3.68\*** | **0.015**  |
|  Delphinidin, mg/d b | 0.65 ± 0.50 | 0.63 ± 0.42 | **0.50 ± 0.42\*** | 0.52 ± 0.38 | **0.012**  |
|  Cyanidin, mg/d b | 6.11 ± 3.83 | 5.55 ± 3.40 | 5.23 ± 3.88 | **4.54 ± 3.13\*\*** | **0.010**  |
|  Peonidin, mg/d b | 0.93 ± 0.63 | 1.02 ± 0.84 | 0.90 ± 0.66 | 0.93 ± 0.75 | 0.585  |
| Limbs FM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.37 ± 3.95 | 6.91 ± 4.29 | 7.02 ± 4.13 | 6.21 ± 3.84 | 0.180  |
|  Delphinidin, mg/d b | 0.65 ± 0.46 | 0.61 ± 0.47 | 0.55 ± 0.39 | 0.51 ± 0.40 | 0.069  |
|  Cyanidin, mg/d b | 5.83 ± 3.63 | 5.32 ± 3.63 | 5.55 ± 3.67 | 4.73 ± 3.45 | 0.125  |
|  Peonidin, mg/d b | 0.93 ± 0.59 | 0.99 ± 0.82 | 0.91 ± 0.68 | 0.95 ± 0.78 | 0.860  |
| Limbs LM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.03 ± 4.02 | 6.49 ± 3.95 | 6.86 ± 3.99 | 7.13 ± 4.30 | 0.659  |
|  Delphinidin, mg/d b | 0.58 ± 0.43 | 0.57 ± 0.44 | 0.55 ± 0.37 | 0.60 ± 0.50 | 0.840  |
|  Cyanidin, mg/d b | 5.56 ± 3.67 | 5.05 ± 3.43 | 5.34 ± 3.59 | 5.48 ± 3.76 | 0.719  |
|  Peonidin, mg/d b | 0.92 ± 0.63 | 0.89 ± 0.62 | 0.97 ± 0.91 | 1.00 ± 0.70 | 0.696  |
| Limbs FMP |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.33 ± 3.86 | 7.48 ± 4.62 | 6.64 ± 3.92 | 6.06 ± 3.69 | **0.031**  |
|  Delphinidin, mg/d b | 0.67 ± 0.52 | 0.63 ± 0.46 | **0.48 ± 0.28\*\*** | 0.53 ± 0.41 | **0.003**  |
|  Cyanidin, mg/d b | 5.75 ± 3.30 | 5.87 ± 4.24 | 5.24 ± 3.54 | **4.57 ± 3.16¶** | **0.026**  |
|  Peonidin, mg/d b | 0.92 ± 0.60 | 1.00 ± 0.77 | 0.91 ± 0.78 | 0.94 ± 0.73 | 0.798  |
| Android area FM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.87 ± 4.73 | 6.65 ± 3.86 | 6.62 ± 3.61 | **6.37 ± 3.86\*** | **0.026**  |
|  Delphinidin, mg/d b | 0.70 ± 0.52 | 0.56 ± 0.43 | **0.53 ± 0.36\*** | **0.51 ± 0.40\*\*** | **0.005**  |
|  Cyanidin, mg/d b | 6.25 ± 4.27 | 5.13 ± 3.41 | 5.18 ± 3.08 | **4.87 ± 3.45\*** | **0.021**  |
|  Peonidin, mg/d b | 0.96 ± 0.64 | 0.97 ± 0.86 | 0.88 ± 0.60 | 0.96 ± 0.78 | 0.793  |
| Android area LM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 6.92 ± 4.27 | 6.82 ± 3.93 | 6.82 ± 3.85 | 6.94 ± 4.25 | 0.994  |
|  Delphinidin, mg/d b | 0.61 ± 0.43 | 0.59 ± 0.47 | 0.53 ± 0.35 | 0.58 ± 0.48 | 0.516  |
|  Cyanidin, mg/d b | 5.43 ± 3.76 | 5.27 ± 3.46 | 5.36 ± 3.54 | 5.37 ± 3.71 | 0.990  |
|  Peonidin, mg/d b | 0.91 ± 0.61 | 0.98 ± 0.79 | 0.94 ± 0.82 | 0.95 ± 0.67 | 0.939  |
| Android area FMP |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.74 ± 4.32 | 7.18 ± 4.26 | 6.51 ± 3.86 | **6.07 ± 3.62\*** | **0.011**  |
|  Delphinidin, mg/d b | 0.71 ± 0.52 | 0.57 ± 0.43 | **0.48 ± 0.33\*\*** | **0.55 ± 0.41\*** | **0.001**  |
|  Cyanidin, mg/d b | 6.09 ± 3.82 | 5.65 ± 3.85 | 5.11 ± 3.49 | **4.58 ± 3.07\*\*** | **0.010**  |
|  Peonidin, mg/d b | 0.96 ± 0.64 | 0.99 ± 0.87 | 0.90 ± 0.64 | 0.93 ± 0.73 | 0.788  |
| Gynoid area FM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.40 ± 3.92 | 7.02 ± 4.56 | 6.74 ± 3.81 | 6.35 ± 3.91 | 0.257  |
|  Delphinidin, mg/d b | 0.65 ± 0.48 | 0.61 ± 0.47 | 0.54 ± 0.38 | 0.50 ± 0.39 | 0.040  |
|  Cyanidin, mg/d b | 5.86 ± 3.59 | 5.43 ± 3.98 | 5.23 ± 3.32 | 4.92 ± 3.48 | 0.255  |
|  Peonidin, mg/d b | 0.94 ± 0.59 | 0.99 ± 0.82 | 0.94 ± 0.77 | 0.90 ± 0.71 | 0.835  |
| Gynoid area LM |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.15 ± 4.49 | 6.69 ± 3.67 | 6.58 ± 3.84 | 7.09 ± 4.22 | 0.649  |
|  Delphinidin, mg/d b | 0.64 ± 0.51 | 0.54 ± 0.36 | 0.55 ± 0.37 | 0.58 ± 0.48 | 0.311  |
|  Cyanidin, mg/d b | 5.63 ± 3.95 | 5.17 ± 3.27 | 5.11 ± 3.46 | 5.52 ± 3.73 | 0.640  |
|  Peonidin, mg/d b | 0.92 ± 0.68 | 0.99 ± 0.84 | 0.90 ± 0.70 | 0.97 ± 0.66 | 0.792  |
| Gynoid area FMP |  |  |  |  |  |
|  Anthocyanidin, mg/d b | 7.58 ± 4.05 | 7.06 ± 4.02 | 7.08 ± 4.35 | **5.79 ± 3.64\*\*** | **0.007**  |
|  Delphinidin, mg/d b | 0.67 ± 0.52 | 0.61 ± 0.41 | 0.55 ± 0.46 | **0.47 ± 0.31\*\*** | **0.005**  |
|  Cyanidin, mg/d b | 5.98 ± 3.50 | 5.43 ± 3.78 | 5.57 ± 3.76 | **4.46 ± 3.24\*\*** | **0.012**  |
|  Peonidin, mg/d b | 0.95 ± 0.65 | 1.03 ± 0.88 | 0.95 ± 0.65 | 0.85 ± 0.69 | 0.287  |

One-way ANOVA analysis. a: P value of the differences between groups. b: dietary intakes of nutrients were energy adjusted. **\*:** P<0.05, **\*\*:** P<0.01 compared with Q1. **¶:** P<0.05, compared with Q1.

**Supplemental Table 2. Relationship between dietary anthocyanidins and other nutrients.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Anthocyanidin | Delphinidin | Cyanidin | Peonidin |
|  | *r’* | *P* | *r’* | *P* | *r’* | *P* | *r’* | *P* |
| Protein | 0.045 | 0.340 | 0.088 | 0.063 | 0.034 | 0.472 | 0.060 | 0.202 |
| Fat | -0.087 | 0.066 | -0.079 | 0.095 | -0.076 | 0.108 | -0.028 | 0.549 |
| Carbohydrate | 0.116 | **0.014** | 0.108 | **0.022** | 0.102 | **0.030** | 0.056 | 0.234 |
| Cholesterol | 0.065 | 0.168 | 0.068 | 0.150 | 0.078 | 0.101 | 0.016 | 0.743 |
| Calcium | 0.176 | **<0.001** | 0.202 | **<0.001** | 0.173 | **<0.001** | 0.149 | **0.002** |
| Vitamin D | 0.011 | 0.823 | 0.005 | 0.913 | 0.019 | 0.686 | 0.013 | 0.782 |
| Vegetables | 0.404 | **<0.001** | 0.515 | **<0.001** | 0.330 | **<0.001** | 0.351 | **<0.001** |
| Fruits | 0.744 | **<0.001** | 0.397 | **<0.001** | 0.781 | **<0.001** | 0.326 | **<0.001** |

All the nutrients and foods were energy-adjusted using the residual method. Partial correlation analysis, adjusted for age and sex; All variables were log-transformed.

**Supplemental Table 3. Univariate analysis of associations between dietary anthocyanidins and body composition.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  Anthocyanidin |  | Delphinidin |  | Cyanidin |  | Peonidin |
| *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |
| Whole body |
| FM, kg | -0.371  | 0.173  | **0.032**  |  | -0.413  | 0.173  | **0.017**  |  | -0.407  | 0.172  | **0.019**  |  | 0.064  | 0.173  | 0.710  |
| LM, kg | 0.135  | 0.179  | 0.450  |  | -0.031  | 0.179  | 0.864  |  | 0.076  | 0.179  | 0.670  |  | 0.245  | 0.178  | 0.171  |
| FMP, % | -1.032  | 0.289  | **<0.001**  |  | -1.047  | 0.289  | **<0.001**  |  | -1.029  | 0.289  | **<0.001** |  | -0.208  | 0.293  | 0.478  |
|  Trunk  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| FM, kg | -0.174  | 0.078  | **0.027**  |  | -0.170  | 0.078  | **0.031**  |  | -0.193  | 0.078  | **0.014**  |  | 0.035  | 0.079  | 0.659  |
| LM, kg | 0.047  | 0.084  | 0.576  |  | -0.044  | 0.084  | 0.600  |  | 0.020  | 0.084  | 0.813  |  | 0.115  | 0.084  | 0.171  |
| FMP, % | -1.136  | 0.313  | **<0.001**  |  | -0.966  | 0.314  | **0.002**  |  | -1.154  | 0.312  | **<0.001** |  | -0.218  | 0.317  | 0.491  |
| Limbs |
| FM, kg | -0.196  | 0.092  | **0.035**  |  | -0.236  | 0.092  | **0.011**  |  | -0.211  | 0.092  | **0.023**  |  | 0.026  | 0.093  | 0.777  |
| LM, kg | 0.087  | 0.085  | 0.311  |  | 0.031  | 0.086  | 0.717  |  | 0.056  | 0.085  | 0.516  |  | 0.121  | 0.085  | 0.156  |
| FMP, % | -1.221  | 0.355  | **0.001**  |  | -1.433  | 0.354  | **<0.001** |  | -1.188  | 0.356  | **0.001**  |  | -0.284  | 0.360  | 0.430  |
| Android area |
| FM, kg | -0.028  | 0.013  | **0.035**  |  | -0.027  | 0.013  | **0.042**  |  | -0.031  | 0.013  | **0.020**  |  | 0.006  | 0.013  | 0.664  |
| LM, kg | 0.004  | 0.014  | 0.773  |  | -0.010  | 0.014  | 0.472  |  | 0.001  | 0.014  | 0.923  |  | 0.011  | 0.014  | 0.434  |
| FMP, % | -1.229  | 0.328  | **<0.001** |  | -1.048  | 0.330  | **0.002**  |  | -1.260  | 0.327  | **<0.001** |  | -0.153  | 0.333  | 0.647  |
| Gynoid area |
| FM, kg | -0.057  | 0.028  | **0.044**  |  | -0.077  | 0.028  | **0.006**  |  | -0.057  | 0.028  | **0.041**  |  | -0.006  | 0.028  | 0.825  |
| LM, kg | 0.012  | 0.033  | 0.707  |  | -0.024  | 0.033  | 0.465  |  | 0.006  | 0.033  | 0.860  |  | 0.029  | 0.033  | 0.375  |
| FMP, % | -1.049  | 0.292  | **<0.001**  |  | -1.162  | 0.292  | **<0.001** |  | -0.991  | 0.292  | **0.001**  |  | -0.394  | 0.296  | 0.184  |

FM: fat mass; LM: lean mass; FMP: fat mass percentage;

Linear regression analysis without adjustment.

**Supplemental Table 4. Univariate analysis of associations between dietary anthocyanidins and body composition stratified by sex.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  Anthocyanidin |  | Delphinidin |  | Cyanidin |  | Peonidin |
| *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |
| Girls (N=197) |
| Whole body | FM, kg | -0.321 | 0.212 | 0.131 |  | -0.461  | 0.210  | **0.030**  |  | -0.271  | 0.212  | 0.203  |  | -0.221  | 0.212  | 0.299  |
| LM, kg | 0.169  | 0.221  | 0.446  |  | -0.039  | 0.221  | 0.859  |  | 0.175  | 0.221  | 0.430  |  | 0.102  | 0.221  | 0.645  |
| FMP, % | -0.966  | 0.415  | **0.021**  |  | -1.164  | 0.412  | **0.005**  |  | -0.829  | 0.416  | **0.048**  |  | -0.707  | 0.417  | 0.092  |
| Trunk  | FM, kg | -0.141  | 0.096  | 0.143  |  | -0.192  | 0.095  | **0.045**  |  | -0.122  | 0.096  | 0.203  |  | -0.084  | 0.096  | 0.381  |
| LM, kg | 0.047  | 0.106  | 0.660  |  | -0.071  | 0.106  | 0.504  |  | 0.054  | 0.106  | 0.614  |  | 0.037  | 0.106  | 0.727  |
| FMP, % | -0.965  | 0.460  | **0.037**  |  | -1.035  | 0.459  | **0.025**  |  | -0.852  | 0.461  | 0.066  |  | -0.673  | 0.462  | 0.147  |
| Limbs | FM, kg | -0.180  | 0.115  | 0.119  |  | -0.262  | 0.114  | **0.023**  |  | -0.148  | 0.115  | 0.200  |  | -0.138  | 0.115  | 0.232  |
| LM, kg | 0.118  | 0.105  | 0.261  |  | 0.050  | 0.105  | 0.635  |  | 0.116  | 0.105  | 0.271  |  | 0.060  | 0.105  | 0.570  |
| FMP, % | -1.236  | 0.502  | **0.015**  |  | -1.625  | 0.496  | **0.001**  |  | -1.035  | 0.504  | **0.041**  |  | -0.945  | 0.505  | 0.063  |
| Android area | FM, kg | -0.020  | 0.015  | 0.200  |  | -0.028  | 0.015  | 0.068  |  | -0.016  | 0.015  | 0.279  |  | -0.013  | 0.015  | 0.383  |
| LM, kg | 0.004  | 0.017  | 0.800  |  | -0.023  | 0.017  | 0.189  |  | 0.009  | 0.017  | 0.607  |  | -0.007  | 0.017  | 0.689  |
| FMP, % | -0.996  | 0.459  | **0.031**  |  | -0.914  | 0.460  | **0.048**  |  | -0.931  | 0.459  | **0.044**  |  | -0.514  | 0.463  | 0.268  |
| Gynoid area | FM, kg | -0.047  | 0.036  | 0.191  |  | -0.082  | 0.036  | **0.022**  |  | -0.034  | 0.036  | 0.343  |  | -0.053  | 0.036  | 0.146  |
| LM, kg | 0.016  | 0.041  | 0.689  |  | -0.028  | 0.041  | 0.495  |  | 0.022  | 0.041  | 0.594  |  | -0.001  | 0.041  | 0.981  |
| FMP, % | -0.911  | 0.408  | **0.027**  |  | -1.188  | 0.404  | **0.004**  |  | -0.722  | 0.410  | 0.080  |  | -0.915  | 0.408  | **0.026**  |
| Boys (N=255) |
| Whole body | FM, kg | -0.410 | 0.259 | 0.115 |  | -0.376  | 0.260  | 0.149  |  | -0.511  | 0.258  | **0.049**  |  | 0.285  | 0.260  | 0.274  |
| LM, kg | 0.109  | 0.255  | 0.669  |  | -0.024  | 0.256  | 0.926  |  | 0.000  | 0.255  | 1.000  |  | 0.355  | 0.254  | 0.164  |
| FMP, % | -1.083  | 0.390  | **0.006**  |  | -0.957  | 0.393  | **0.016**  |  | -1.183  | 0.389  | **0.003**  |  | 0.177  | 0.396  | 0.655  |
| Trunk  | FM, kg | -0.199  | 0.118  | 0.092  |  | -0.154  | 0.118  | 0.196  |  | -0.247  | 0.117  | **0.036**  |  | 0.127  | 0.118  | 0.285  |
| LM, kg | 0.047  | 0.119  | 0.694  |  | -0.023  | 0.120  | 0.846  |  | -0.006  | 0.119  | 0.959  |  | 0.175  | 0.119  | 0.142  |
| FMP, % | -1.268  | 0.420  | **0.003**  |  | -0.912  | 0.424  | **0.032**  |  | -1.388  | 0.418  | **0.001**  |  | 0.133  | 0.427  | 0.757  |
| Limbs | FM, kg | -0.208  | 0.138  | 0.133  |  | -0.216  | 0.139  | 0.119  |  | -0.260  | 0.138  | 0.060  |  | 0.153  | 0.138  | 0.269  |
| LM, kg | 0.062  | 0.123  | 0.612  |  | 0.016  | 0.123  | 0.894  |  | 0.009  | 0.123  | 0.942  |  | 0.169  | 0.122  | 0.169  |
| FMP, % | -1.210  | 0.478  | **0.012**  |  | -1.285  | 0.479  | **0.008**  |  | -1.306  | 0.477  | **0.007**  |  | 0.227  | 0.484  | 0.640  |
| Android area | FM, kg | -0.035  | 0.020  | 0.089  |  | -0.027  | 0.021  | 0.194  |  | -0.043  | 0.020  | **0.038**  |  | 0.021  | 0.020  | 0.316  |
| LM, kg | 0.004  | 0.021  | 0.849  |  | -0.001  | 0.021  | 0.970  |  | -0.004  | 0.021  | 0.831  |  | 0.025  | 0.021  | 0.224  |
| FMP, % | -1.409  | 0.459  | **0.002**  |  | -1.152  | 0.463  | **0.013**  |  | -1.514  | 0.458  | **0.001**  |  | 0.126  | 0.467  | 0.787  |
| Gynoid area | FM, kg | -0.064  | 0.041  | 0.122  |  | -0.073  | 0.041  | 0.078  |  | -0.075  | 0.041  | 0.069  |  | 0.030  | 0.041  | 0.474  |
| LM, kg | 0.009  | 0.048  | 0.844  |  | -0.022  | 0.049  | 0.657  |  | -0.006  | 0.048  | 0.895  |  | 0.053  | 0.048  | 0.273  |
| FMP, % | -1.156  | 0.380  | **0.003**  |  | -1.141  | 0.382  | **0.003**  |  | -1.199  | 0.380  | **0.002**  |  | 0.009  | 0.387  | 0.982  |

FM: fat mass; LM: lean mass; FMP: fat mass percentage;

Linear regression analysis without adjustment.

**Supplemental Table 5. Associations of dietary anthocyanidins with body composition after adjusted for potential covariates stratified by sex.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  Anthocyanidin |  | Delphinidin |  | Cyanidin |  | Peonidin |
| *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |  | *β* | *SE* | *P* |
| Girls (N=197) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Whole body | FM, kg | -0.127  | 0.077  | 0.100  |  | -0.130  | 0.076  | 0.089 |  | -0.117  | 0.076  | 0.128  |  | -0.051  | 0.074  | 0.489  |
| LM, kg | 0.178  | 0.076  | **0.020**  |  | 0.154  | 0.076  | **0.044**  |  | 0.166  | 0.076  | **0.030**  |  | 0.080  | 0.074  | 0.280  |
| FMP, % | -0.535  | 0.289  | 0.066 |  | -0.597  | 0.287  | **0.039**  |  | -0.473  | 0.289  | 0.103  |  | -0.291  | 0.278  | 0.298  |
| Trunk  | FM, kg | -0.051  | 0.038  | 0.187  |  | -0.041  | 0.038 | 0.285  |  | -0.052  | 0.038  | 0.180  |  | -0.005  | 0.037  | 0.899  |
| LM, kg | 0.069  | 0.041  | 0.089  |  | 0.033  | 0.041  | 0.416  |  | 0.067  | 0.040  | 0.099  |  | 0.036  | 0.039  | 0.360  |
| FMP, % | -0.533  | 0.320  | 0.098 |  | -0.423  | 0.319  | 0.186  |  | -0.503  | 0.319  | 0.116  |  | -0.230  | 0.308  | 0.455  |
| Limbs | FM, kg | -0.077  | 0.046  | 0.093  |  | -0.088  | 0.045  | 0.053 |  | -0.066  | 0.045  | 0.149  |  | -0.050  | 0.044  | 0.254  |
| LM, kg | 0.102  | 0.044  | **0.020**  |  | 0.124  | 0.043  | **0.004**  |  | 0.094  | 0.044  | **0.033**  |  | 0.034  | 0.042  | 0.419  |
| FMP, % | -0.694  | 0.387  | 0.074  |  | -0.977  | 0.381  | **0.011**  |  | -0.575  | 0.386  | 0.139  |  | -0.443  | 0.372  | 0.235  |
| Android area | FM, kg | -0.005  | 0.006  | 0.370 |  | -0.003  | 0.006  | 0.607  |  | -0.006  | 0.006  | 0.356  |  | -0.001  | 0.006  | 0.878  |
| LM, kg | 0.012  | 0.009  | 0.177  |  | -0.001  | 0.009  | 0.943  |  | 0.014  | 0.009  | 0.107  |  | -0.003  | 0.009  | 0.765  |
| FMP, % | -0.620  | 0.311  | **0.048**  |  | -0.303  | 0.312  | 0.333  |  | -0.644  | 0.309  | **0.039**  |  | -0.101  | 0.301  | 0.738  |
| Gynoid area | FM, kg | -0.017  | 0.015  | 0.234  |  | -0.029  | 0.014  | **0.043**  |  | -0.010  | 0.014  | 0.479  |  | -0.027  | 0.014  | **0.049**  |
| LM, kg | 0.030  | 0.017  | 0.082  |  | 0.014  | 0.017  | 0.400  |  | 0.031  | 0.017  | 0.067  |  | 0.004  | 0.016  | 0.820  |
| FMP, % | -0.578  | 0.339  | 0.090  |  | -0.772  | 0.335  | **0.022**  |  | -0.439  | 0.339  | 0.197  |  | -0.576  | 0.324  | 0.077  |
| Boys (N=255) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Whole body | FM, kg | -0.159  | 0.077  | **0.041**  |  | -0.055  | 0.077  | 0.477  |  | -0.142  | 0.077  | 0.068  |  | -0.103  | 0.071  | 0.148  |
| LM, kg | 0.291  | 0.073  | **<0.001**  |  | 0.147  | 0.074  | **0.049**  |  | 0.285  | 0.073  | **<0.001** |  | 0.060  | 0.069  | 0.390  |
| FMP, % | -0.798  | 0.262  | **0.003**  |  | -0.549  | 0.262  | **0.037**  |  | -0.728  | 0.262  | **0.006**  |  | -0.341  | 0.244  | 0.164  |
| Trunk  | FM, kg | -0.086  | 0.038  | **0.025**  |  | 0.001 | 0.038  | 0.985  |  | -0.082  | 0.038  | **0.032**  |  | -0.047  | 0.035  | 0.179  |
| LM, kg | 0.139  | 0.036  | **<0.001**  |  | 0.059  | 0.037  | 0.110 |  | 0.134  | 0.036  | **<0.001** |  | 0.038  | 0.034  | 0.261  |
| FMP, % | -0.973  | 0.266  | **<0.001**  |  | -0.409  | 0.267  | 0.128  |  | -0.915  | 0.265  | **0.001**  |  | -0.435  | 0.248  | 0.081  |
| Limbs | FM, kg | -0.072  | 0.048  | 0.130  |  | -0.051  | 0.047  | 0.278  |  | -0.060  | 0.047  | 0.206  |  | -0.052  | 0.044  | 0.231  |
| LM, kg | 0.151  | 0.043  | **0.001**  |  | 0.104  | 0.043  | **0.017**  |  | 0.144  | 0.043  | **0.001**  |  | 0.034  | 0.041  | 0.397  |
| FMP, % | -0.892  | 0.377  | **0.019**  |  | -0.899  | 0.372  | **0.016**  |  | -0.788  | 0.375  | **0.037**  |  | -0.350  | 0.348  | 0.316  |
| Android area | FM, kg | -0.013  | 0.007  | 0.087  |  | 0.002  | 0.007  | 0.822  |  | -0.012  | 0.007  | 0.112  |  | -0.008  | 0.007  | 0.238  |
| LM, kg | 0.017  | 0.008  | **0.047**  |  | 0.013  | 0.008  | 0.123 |  | 0.017  | 0.008  | **0.042**  |  | -0.001  | 0.008  | 0.904  |
| FMP, % | -0.986  | 0.305  | **0.001**  |  | -0.547  | 0.305  | 0.074 |  | -0.911  | 0.304  | **0.003**  |  | -0.425  | 0.284  | 0.136  |
| Gynoid area | FM, kg | -0.032  | 0.016  | **0.042**  |  | -0.030  | 0.015  | 0.054  |  | -0.023  | 0.016  | 0.131  |  | -0.032  | 0.014  | **0.026**  |
| LM, kg | 0.046  | 0.017  | **0.008**  |  | 0.014  | 0.017  | 0.405  |  | 0.051  | 0.017  | **0.003**  |  | -0.011  | 0.016  | 0.480  |
| FMP, % | -1.025  | 0.342  | **0.003**  |  | -0.900  | 0.339  | **0.009**  |  | -0.931  | 0.341  | **0.007**  |  | -0.367  | 0.318  | 0.250  |

FM: fat mass; LM: lean mass; FMP: fat mass percentage;

Linear regression analysis, without adjustment for covariates including: age, sex, height, weight, delivery way, household income, parental education, physical activity, use of calcium and multi-vitamin supplements, dietary intake of energy, protein, fat, carbohydrate, cholesterol, calcium, vitamin D.

**Supplemental Table 6: Associations of dietary anthocyanidins with handgrip strength.**

|  |  |
| --- | --- |
| Handgrip strength, kg | Per SD increase of dietary anthocyanidin and its main compounds |
| Anthocyanidin |  | Delphinidin |  | Cyanidin |  | Peonidin |
| *β* | *se* | *p* |  | *β* | *se* | *p* |  | *β* | *se* | *p* |  | *β* | *se* | *p* |
| Total (N=452) |
| Model 1 | 0.161 | 0.135 | 0.231 |  | 0.041 | 0.134 | 0.759 |  | 0.098 | 0.134 | 0.466 |  | 0.241 | 0.134 | 0.072 |
| Model 2 | 0.185 | 0.092 | **0.044** |  | 0.151 | 0.091 | 0.100 |  | 0.158 | 0.092 | 0.088 |  | 0.126 | 0.091 | 0.169 |
| Model 3 | 0.127  | 0.098  | 0.193 |  | 0.097  | 0.097  | 0.314  |  | 0.093  | 0.098  | 0.344  |  | 0.099  | 0.092  | 0.282  |
| Girls (N=197) |
| Model 1 | 0.115  | 0.172  | 0.504  |  | 0.183  | 0.176  | 0.301  |  | 0.235  | 0.180  | 0.194  |  | 0.112  | 0.187  | 0.549  |
| Model 2 | 0.212 | 0.134 | 0.115 |  | 0.278 | 0.133 | **0.038** |  | 0.201 | 0.134 | 0.135 |  | 0.035 | 0.133 | 0.790 |
| Model 3 | 0.165  | 0.139  | 0.236  |  | 0.158  | 0.135  | 0.244 |  | 0.137  | 0.135  | 0.312  |  | 0.018  | 0.130  | 0.892  |
| Boys (N=255) |
| Model 1 | 0.274  | 0.197  | 0.165  |  | -0.018  | 0.191  | 0.923  |  | 0.010  | 0.187  | 0.958  |  | 0.330  | 0.181  | 0.071  |
| Model 2 | 0.202 | 0.128 | 0.117 |  | 0.058 | 0.128 | 0.652 |  | 0.166 | 0.129 | 0.198 |  | 0.222 | 0.128 | 0.083 |
| Model 3 | 0.123  | 0.139  | 0.376 |  | -0.059  | 0.139  | 0.670  |  | 0.143  | 0.140  | 0.309  |  | 0.205  | 0.129  | 0.113  |

Logistic regression analysis, with Model 1 as univariate analysis without adjustment; Model 2 adjusted for covariates including: age, sex, height, weight, delivery way, household income, parental education, physical activity, use of calcium and multi-vitamin supplements, dietary intake of energy; and Model 3 further adjusted for dietary intake protein, fat, carbohydrate, cholesterol, calcium, vitamin D.