**Appendix**

**Supplementary Data**

Table A. Distribution of whole grain consumption (g/d) in French children and adults (consumers only)

(means, standard deviations, medians, 95th percentile and distributions)

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Children consumers (3-17 yrs) n=532** |   | **Adults consumers (18 yrs +) n=460** |
|   | mean | std | median | p95 | %distri |   | mean | std | median | p95 | %distri |
| **Total WG intake** | 9.0 | 0.5 | 5.4 | 26.4 |   |   | 14.4 | 0.8 | 8.1 | 51.8 |   |
| **Meal occasion** |  |  |  |  |  |   |  |  |  |  |  |
|  Breakfast | 5.5 | 0.4 | 2.3 | 20.7 | 60% |   | 6.8 | 0.5 | 1.7 | 29.8 | 47% |
|  Lunch | 0.8 | 0.1 | 0.0 | 5.7 | 9% |   | 2.9 | 0.4 | 0.0 | 12.9 | 20% |
|  Afternoon snack | 1.1 | 0.1 | 0.0 | 5.8 | 12% |   | 0.7 | 0.1 | 0.0 | 5.0 | 5% |
|  Dinner | 1.5 | 0.3 | 0.0 | 7.7 | 17% |   | 3.8 | 0.4 | 0.0 | 19.3 | 26% |
|  Pre-meal snack | 0.0 | 0.0 | 0.0 | 0.0 | 0% |   | 0.0 | 0.0 | 0.0 | 0.0 | 0% |
|  Other snacks | 0.1 | 0.0 | 0.0 | 0.0 | 1% |   | 0.2 | 0.1 | 0.0 | 0.8 | 2% |
| **Meal location** |  |  |  |  |  |   |  |  |  |  |  |
|  At home | 7.9 | 0.4 | 4.5 | 25.6 | 87% |   | 13.1 | 0.8 | 7.2 | 51.8 | 91% |
|  Outside home | 0.8 | 0.2 | 0.0 | 4.3 | 10% |   | 1.0 | 0.2 | 0.0 | 6.4 | 7% |
|  Not declared | 0.3 | 0.1 | 0.0 | 1.3 | 3% |   | 0.3 | 0.1 | 0.0 | 0.5 | 2% |
| **Weekdays versus weekend** |  |  |  |  |   |  |  |  |  |  |   |
|  Weekdays | 6.2 | 0.3 | 4.0 | 20.0 | 69% |   | 10.9 | 0.7 | 5.6 | 42.6 | 76% |
|  Weekend | 2.8 | 0.2 | 1.3 | 9.9 | 31% |   | 3.5 | 0.2 | 1.1 | 13.9 | 24% |

%distri: % of meals occasions. locations and days of the week in total WG intake

Table B. Whole grain intakes per food group (g/d) in children and adults across tertiles of intake in whole grain consumers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Children (3-17 yrs) n=532** | **0<WG<3 (n=185)** |  | **3≤WG<8.9 (n=192)** |  | **WG≥8.9 (n=155)** |   | P |
|   | %cons | mean |   | std | %ctr |   | %cons | mean |   | std | %ctr |   | %cons | mean |   | std | %ctr |   |
| GRAIN-BASED PRODUCTS |  - | 1.6 | a | 0.1 |  - |   |  - | 5.6 | b | 0.1 |  - |   |  - | 20.1 | c | 1.1 |  - |   | \*\*\* |
| Sweet crackers and biscuits | 28% | 0.4 | a | 0.1 | 26% |   | 24% | 0.8 | a.b | 0.1 | 15% |   | 16% | 0.9 | b | 0.2 | 5% |   | \* |
| RTEBC | 45% | 0.8 | a | 0.1 | 49% |   | 55% | 2.5 | b | 0.2 | 46% |   | 77% | 11.1 | c | 0.7 | 55% |   | \*\*\* |
| Breads & toasts | 3% | 0.0 | a | 0.0 | 3% |   | 20% | 0.9 | a | 0.1 | 16% |   | 31% | 6.3 | b | 1.3 | 32% |   | \*\*\* |
| Pastas, rice and cooked cereals | 7% | 0.1 | a | 0.0 | 7% |   | 14% | 0.5 | a.b | 0.1 | 10% |   | 9% | 0.6 | b | 0.2 | 3% |   | \*\* |
| Cereal bars, popcorn and other products | 28% | 0.3 | a | 0.0 | 16% |   | 27% | 0.7 | a.b | 0.1 | 13% |   | 18% | 1.1 | b | 0.3 | 5% |   | \*\* |
| **Adults (18 yrs +) n=460** | **0<WG<4.4 (n=157)** |  | **4.4≤WG<13.3 (n=158)** |  | **WG≥13.3 (n=145)** |   |   |
|   | %cons | mean |   | std | %ctr |   | %cons | mean |   | std | %ctr |   | %cons | mean |   | std | %ctr |   | P |
| GRAIN-BASED PRODUCTS |  - | 2.3 | a | 0.1 |  - |   |  - | 8.4 | b | 0.2 |  - |   |  - | 32.8 | c | 1.8 |  - |   | \*\*\* |
| Sweet crackers and biscuits | 20% | 0.4 |  | 0.1 | 16% |   | 12% | 0.7 |  | 0.2 | 8% |   | 14% | 1.0 |  | 0.3 | 3% |   | NS |
| RTEBC | 31% | 0.8 | a | 0.1 | 35% |   | 27% | 2.1 | a | 0.3 | 24% |   | 38% | 7.5 | b | 1.1 | 23% |   | \*\*\* |
| Breads & toasts | 21% | 0.5 | a | 0.1 | 23% |   | 47% | 3.4 | a | 0.3 | 41% |   | 65% | 20.1 | b | 2.0 | 61% |   | \*\*\* |
| Pastas, rice and cooked cereals | 15% | 0.3 | a | 0.1 | 11% |   | 15% | 0.9 | a | 0.2 | 11% |   | 27% | 3.1 | b | 0.6 | 9% |   | \*\*\* |
| Cereal bars, popcorn and other products | 22% | 0.3 | a | 0.1 | 14% |   | 23% | 1.4 | b | 0.2 | 16% |   | 11% | 1.2 | b | 0.3 | 4% |   | \*\* |

%cons: % of consumers (weighted) of each whole grain food group; %ctr: % contribution of food groups to whole grain total intake

Mean values were significantly different: \* P<0.05; \*\* P<0.01; \*\*\* P<0.001; NS P≥0.05 (MANCOVA, adjusted for gender and age)

a,b,c, mean values with unlike superscript letters were significantly different (Bonferroni post hoc test)

Table C. Food groups intakes (g/d) in children and adults across tertiles of intake in whole grain consumers

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Children (3-17 yrs) n=1171** | **WG=0 (n=639)** |  | **0<WG<3.2 (n=186)** |  | **3.2≤WG<9.9 (n=190)** |  | **WG≥9.9 (n=156)** |   | **P** |
|   | mean |   | std |   | mean |   | std |   | mean |   | std |   | mean |   | std |   |
| Meats | 102.4 | a | 2.6 |   | 83.0 | b | 3.4 |   | 95.6 | a.b | 3.9 |   | 97.7 | a.b | 4.4 |   | \* |
| Fish and shellfish | 18.3 | a | 0.8 |   | 18.4 | a.b | 1.5 |   | 15.6 | a | 1.2 |   | 23.2 | b | 2.1 |   | \* |
| Eggs and products made from eggs | 9.9 |  | 0.6 |   | 8.5 |  | 0.8 |   | 9.6 |  | 1.0 |   | 11.8 |  | 1.1 |   | NS |
| Grain-based products | 256.5 | a | 4.6 |   | 223.5 | b | 6.3 |   | 245.6 | a.b.c | 7.8 |   | 271.0 | a | 8.6 |   | \* |
| *Non whole grain-based products* | *256.5* | *a* | *4.6* |   | *215.4* | *b* | *6.3* |   | *223.2* | *b* | *7.5* |   | *219.3* | *c* | *8.2* |   | *\*\*\** |
| *Whole grain-based products* | *0.0* | *a* | *0.0* |   | *8.1* | *b* | *0.5* |   | *22.4* | *c* | *1.7* |   | *51.8* | *d* | *2.1* |   | *\*\*\** |
| Fruits | 82.0 |  | 3.2 |   | 89.4 |  | 5.7 |   | 93.9 |  | 6.3 |   | 97.2 |  | 6.7 |   | NS |
| Vegetables | 66.4 | a.b | 2.1 |   | 60.5 | a | 3.6 |   | 66.8 | a.b | 3.7 |   | 77.9 | b | 3.9 |   | \* |
| Legumes and dried fruits | 8.3 |  | 0.7 |   | 7.7 |  | 1.3 |   | 6.4 |  | 1.0 |   | 8.6 |  | 1.3 |   | NS |
| Potatoes | 55.8 |  | 1.9 |   | 47.9 |  | 3.7 |   | 52.7 |  | 3.3 |   | 57.2 |  | 3.4 |   | NS |
| Dairy products | 214.3 | a | 5.9 |   | 251.7 | b | 12.0 |   | 251.4 | b | 10.0 |   | 288.1 | b | 13.1 |   | \*\*\* |
| Prepared meals or already-made dishes | 105.6 |  | 3.4 |   | 97.5 |  | 4.5 |   | 93.5 |  | 5.0 |   | 109.7 |  | 7.9 |   | NS |
| Soups | 36.4 |  | 2.7 |   | 27.8 |  | 3.7 |   | 27.0 |  | 3.8 |   | 37.9 |  | 5.3 |   | NS |
| Non-alcoholic beverages | 835.4 |  | 13.9 |   | 796.6 |  | 21.6 |   | 833.5 |  | 23.0 |   | 871.8 |  | 30.1 |   | NS |
| Alcoholic beverages | 4.6 |  | 1.1 |   | 2.1 |  | 1.1 |   | 1.8 |  | 0.7 |   | 2.3 |  | 0.9 |   | NS |
| Sweet products | 19.3 |  | 1.0 |   | 18.2 |  | 1.5 |   | 20.0 |  | 1.3 |   | 20.7 |  | 2.1 |   | NS |
| Fats | 5.5 |  | 0.3 |   | 5.8 |  | 0.6 |   | 6.1 |  | 0.5 |   | 5.9 |  | 0.5 |   | NS |
| Seasonings | 10.4 |  | 0.5 |   | 11.5 |  | 0.9 |   | 12.9 |  | 1.1 |   | 12.6 |  | 1.4 |   | NS |
| **Adults (18 yrs +) n=1389** | **WG=0 (n=929)** |  | **0<WG<4.9 (n=153)** |  | **4.9≤WG<15.6 (n=160)** |  | **WG≥15.6 (n=147)** |   | **P** |
|   | mean |   | std |   | mean |   | std |   | mean |   | std |   | mean |   | std |   |
| **Food groups intake (g/d)** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Meats | 134.2 |  | 2.6 |   | 117.1 |  | 5.9 |   | 123.2 |  | 8.1 |   | 117.2 |  | 6.8 |   | NS |
| Fish and shellfish | 25.2 | a | 1.0 |   | 24.6 | a.b | 2.0 |   | 33.8 | b | 3.7 |   | 33.6 | b | 2.6 |   | \*\*\* |
| Eggs and products made from eggs | 14.3 |  | 0.7 |   | 14.5 |  | 1.5 |   | 14.7 |  | 2.0 |   | 11.6 |  | 1.3 |   | NS |
| Grain-based products | 282.0 |  | 4.2 |   | 293.3 |  | 7.7 |   | 290.5 |  | 9.8 |   | 300.5 |  | 9.1 |   | NS |
| *Non whole grain-based products* | *282.0* | *a* | *4.2* |   | *280.6* | *a* | *7.6* |   | *264.4* | *a* | *9.5* |   | *228.5* | *b* | *8.6* |   | *\*\*\** |
| *Whole grain-based products* | *0.0* | *a* | *0.0* |   | *12.6* | *b* | *1.0* |   | *26.1* | *c* | *1.1* |   | *72.0* | *d* | *3.5* |   | *\*\*\** |
| Fruits | 115.8 | a | 3.9 |   | 140.2 | a.b | 9.8 |   | 152.3 | b | 10.8 |   | 170.5 | b | 10.6 |   | \*\*\* |
| Vegetables | 103.5 | a | 2.6 |   | 103.9 | a | 5.8 |   | 113.2 | a.b | 6.3 |   | 133.8 | b | 9.1 |   | \*\*\* |
| Legumes and dried fruits | 12.6 | a | 0.8 |   | 12.8 | a.b | 1.6 |   | 17.2 | a.b | 2.5 |   | 20.7 | b | 2.5 |   | \*\*\* |
| Potatoes | 62.8 | a | 1.9 |   | 45.9 | b | 3.2 |   | 61.4 | a.b | 5.4 |   | 50.7 | a.b | 4.3 |   | \*\* |
| Dairy products | 152.6 | a | 3.4 |   | 184.1 | b | 9.3 |   | 195.6 | b | 10.5 |   | 206.5 | b | 10.3 |   | \*\*\* |
| Prepared meals or already-made dishes | 139.0 |  | 3.5 |   | 139.8 |  | 6.6 |   | 136.3 |  | 8.6 |   | 122.2 |  | 7.9 |   | NS |
| Soups | 92.3 |  | 4.7 |   | 80.9 |  | 9.7 |   | 103.4 |  | 12.5 |   | 92.1 |  | 11.2 |   | NS |
| Non-alcoholic beverages | 1074.5 |  | 18.0 |   | 1168.2 |  | 35.7 |   | 1088.4 |  | 34.6 |   | 1167.8 |  | 36.7 |   | NS |
| Alcoholic beverages | 154.6 |  | 9.2 |   | 118.4 |  | 15.8 |   | 120.3 |  | 16.1 |   | 127.1 |  | 14.0 |   | NS |
| Sweet products | 25.3 |  | 1.2 |   | 27.0 |  | 2.0 |   | 26.9 |  | 2.2 |   | 27.9 |  | 2.5 |   | NS |
| Fats | 13.5 |  | 0.5 |   | 11.8 |  | 0.8 |   | 14.8 |  | 1.0 |   | 15.2 |  | 1.4 |   | NS |
| Seasonings | 16.0 | a | 0.6 |   | 16.9 | a.b | 1.3 |   | 18.0 | a.b | 1.4 |   | 21.2 | b | 1.5 |   | \*\* |

Mean values were significantly different: \* P<0.05; \*\*\* P<0.001; NS P≥0.05 (MANCOVA, adjusted for gender and age)

a,b,c, mean values with unlike superscript letters were significantly different (Bonferroni post hoc test)