Dietary intake profile among Tunisians school children having iodine deficiency or excess

R. Doggui*1, M. El Ati-Hellal 2, P. Traissac 3, H. Ben Gharbia 4, J. El Ati 1

1 Institut National de Nutrition et de Technologie Alimentaire, SURVEN Laboratory, Tunis, Tunisia
2 Institut Préparatoire aux Etudes Scientifiques et Techniques, Laboratory Research of Toxicology Research and Environment, Tunisia
3 Institut de Recherche pour le Développement (IRD), NUTRIPASS Unit, IRD-UM-SupAgro, Montpellier, France.
* Speaker and corresponding author: doggui.radhouene@gmail.com
Introduction

Iodine is an essential trace element for thyroid hormones synthesis.

Iodine deficiency disorders (IDD) have been recognized as a public health problem in the world since the 1920s.

In Tunisia, the NW region has been recognized as an IDD area since the 70s.

1984: Mandatory legislation on salt iodization was launched in IDD area.

The National IDD programme was legislated in 1995 and implemented in 1996 as recommended by the WHO/UNICEF/ICCIDD in 1993.

The salt iodization for food use is obligatory and generalized with iodization range is 35-45 ppm of potassium iodate (KIO₃) at production stage.

A national survey conducted in 2012 among Tunisian school children (SAC) showed that 11.4% (n=150) had iodine deficiency and 4.2% (n=68) had iodine excess status.

Our objective was to assess the relation between dietary intake patterns and iodine status of SAC with deficiency or excess urinary iodine concentration.
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2- Methods

- 24 hours dietary recall (three pass) for 150 ID children (urinary iodine concentration or UIC < 100 µg/l) and 68 having excess of iodine (UIC ≥ 500 µg/l).
- A specific Tunisian food composition database and the Food Processor software SQL statistics (mean ± s.e.; student test) by STATA 9.0 software;
- Dietary reference intakes for French population were used.

3- Results & Discussion

Macronutrients and energy

<table>
<thead>
<tr>
<th>Variables</th>
<th>Recommendations (g/d)</th>
<th>7 – 9 y</th>
<th>10 – 12 y</th>
<th>Percent of coverage</th>
<th>UIC &lt; 100 µg/l</th>
<th>UIC ≥ 500 µg/l</th>
<th>P- value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Absolute intake</td>
<td>Absolute intake</td>
<td></td>
</tr>
<tr>
<td>Energy (kcal/d)</td>
<td>1912</td>
<td>2365/2080 (Boys/Girls)</td>
<td></td>
<td>84.2</td>
<td>1830 (31)</td>
<td>1940 (49)</td>
<td>0.130</td>
</tr>
<tr>
<td>Proteins (g/d)</td>
<td>62.5</td>
<td>76/67.5 (Boys/Girls)</td>
<td></td>
<td>85.8</td>
<td>60.5 (1.9)</td>
<td>62.3 (2.4)</td>
<td>0.296</td>
</tr>
<tr>
<td>Carbohydrates (g/d)</td>
<td>251</td>
<td>310/273 (Boys/Girls)</td>
<td></td>
<td>85.3</td>
<td>242.5 (5.0)</td>
<td>257.3 (8.1)</td>
<td>0.300</td>
</tr>
<tr>
<td>Total fats (g/d)</td>
<td>69</td>
<td>85.5/75 (Boys/Girls)</td>
<td></td>
<td>81.9</td>
<td>64.7 (3.1)</td>
<td>69.5 (2.5)</td>
<td>0.061</td>
</tr>
</tbody>
</table>
3- Results & Discussion

- **Micronutrients**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Recommendations (g/d)</th>
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<th>UIC ≥ 500 µg/L</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>7 – 9 y</td>
<td>10 – 12 y</td>
<td>Absolute intake</td>
<td>Absolute intake</td>
<td></td>
</tr>
<tr>
<td>Iodine (µg/d)</td>
<td>120</td>
<td>150</td>
<td>109.4</td>
<td>133.3 (4.7)</td>
<td>181.4 (8.2)</td>
</tr>
<tr>
<td>Iron (mg/d)</td>
<td>7</td>
<td>10</td>
<td>124.4</td>
<td>12.0 (0.2)</td>
<td>11.9 (0.5)</td>
</tr>
<tr>
<td>Selenium (µg/d)</td>
<td>30</td>
<td>40</td>
<td>43.7</td>
<td>14.7 (2.0)</td>
<td>17.2 (4.6)</td>
</tr>
<tr>
<td>Vitamin A (ER)</td>
<td>500</td>
<td>550</td>
<td>86.8</td>
<td>500.7 (51.3)</td>
<td>424.2 (34.5)</td>
</tr>
</tbody>
</table>

- Similar intakes for minerals and vitamins were found except for iodine;

- Prevalence of low iodine intake was 60.1% among ID group.

- low selenium intake was reported which may contribute to goiter formation;
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4. Conclusion

- No differences were found for nutrients intake as regard to the iodine status;
- knowing that salt and bread were the decisive sources of iodine and also only 55.8% of Tunisian households consume adequately iodized salt, strengthening the monitoring system of salt iodization programme to ensure the sustainability of IDD elimination
- Supporting technically the private salt producers to ensure regular quality control of iodized salt.
Thank you

Any question ?