Nutritional balance of ANZAC’s military rations

A recent NZMJ article by Wilson and colleagues\(^1\) dealt with the nutritional quality of food rations at Gallipoli in 1915. While it makes for interesting historical reading, it also incites us to ponder the “link between nutrition and deficiency-diseases\(^2\)”. Indeed, the authors not only documented the typical diet of the ANZAC soldier at the time but also simulated three alternative, better diets. The implications of their results might pass unnoticed, though, if only because of the very nature of nutritional science: it deals with multiple variables which are co-dependent and too free to vary. This work tries to reduce complexity by offering a more “systemic” view of the results.

Methods—I consulted Wilson et al’s\(^1\) Table 2 for identifying the relevant foods and their weight contribution to four diets. Typical nutrition information about those foods was extracted from USDA’s database\(^3\) instead of from Wilson’s paper (because of some information missing).

Diet R-A comprised 14 foods (USDA codes: 13348, 18069, 18232, 20481, 10123, 01009, 19297, 19335, 16085, 16037, 11378, 02047, 02024, 02030), diet R-V expanded diet R-A with three other foods (11308, 09357, 11531), diet R-O comprised six foods (18069, 20481, 01009, 16085, 11531, 20038), and diet R-OV comprised 11 foods (18069, 18232, 20481, 10123, 01009, 16037, 09357, 11531, 20038, 09370, 15126).

The resulting diets were assessed using the Balanced Nutrition Index (BNI) formula,\(^4\) which compares actual percentage contribution against ideal contribution (i.e. Recommended Dietary Intakes, RDI) and adds up any differences as natural numbers. BNI ‘0.00’ indicates a diet which is nutritionally balanced, and the greater the difference from ‘0’, the more unbalanced a diet is.

Results—The ANZAC rations at Gallipoli (R-A) were extremely unbalanced (BNI 60.90, Table 1), with only protein being within recommended intake levels. A more varied diet (R-V) would have improved the military rations slightly (BNI 46.04), reducing excess of total fats, resolving the deficiency in total carbohydrate and increasing dietary fibre, but also increasing the amount of sugars (something of less concern for New Zealanders\(^5\) than for the World Health Organization,\(^6\) apparently).

As per the optimised diets, scenario R-O would have resulted in a significant improvement in the military rations (BNI 12.76), reducing sugars, saturated fats and sodium, but also resulting in low intakes of protein and fibre, and very low intakes of total fats. In comparison, the optimised varied diet (R-OV) would have resulted in well-balanced military rations (BNI 0.33).
Discussion—This paper provides a “systemic” perspective to Wilson et al.’s results on the ANZAC diet in Gallipoli, doing so by contrasting the nutritional value of foods against that of a referential standard (RDI) and making it easier to observe any differences among the four simulated diets.

A diet as extremely unbalanced as BNI 60.90, the typical diet of the ANZAC soldier, is akin to a modern diet based on crackers, flavoured soymilk and corn crisps, the delight, perhaps, of men at leisure but not the most adequate for frontline soldiers. The varied version of that diet (BNI 46.04) is slightly better, yet still extremely unbalanced, akin to a modern diet based on potato crisps, corn chips and soymilk.

The optimised diets, on the other hand, are well-balanced, the delight of heart associations and dieticians alike. As Wilson et al. insinuated, had military planners known better back in 1915, six well-chosen foods would have provided optimal nutrition at a fraction of the cost when it was most needed, especially to prevent major diseases such as scurvy, night blindness, dysentery and typhoid, inconveniences such as constipation and haemorrhoids, and even psychological problems related to low morale and mental health.

Modern New Zealanders may own their freedom to the men who fought back then but, alas, they don’t face the same environmental constrains. And yet, unbalanced diets are commonplace nowadays, and so are the diseases of abundance. May Wilson et al.’s work serve to ponder whether the modern New Zealander is in as much need of a well-chosen limited diet for optimal nutrition as they forefathers were in 1915.

Jose Perezgonzalez
Lecturer
Massey University
Palmerston North, New Zealand
ANZAC Day (25 April) 2013

References:

Table 1. BNI values, and differences from RDI for simulated Gallipoli diets

<table>
<thead>
<tr>
<th>Variables</th>
<th>Scenario R-A</th>
<th>Scenario R-V</th>
<th>Scenario R-O</th>
<th>Scenario R-OV</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNI</td>
<td>60.90na</td>
<td>46.04na</td>
<td>12.76c</td>
<td>0.33-f</td>
</tr>
<tr>
<td>Protein</td>
<td>Adequate</td>
<td>Adequate</td>
<td>Low</td>
<td>Adequate</td>
</tr>
<tr>
<td>Carbohydrate, total</td>
<td>Low</td>
<td>Adequate</td>
<td>Very high</td>
<td>Adequate</td>
</tr>
<tr>
<td>Sugars</td>
<td>High</td>
<td>Very high</td>
<td>Adequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Fat, total</td>
<td>Very high</td>
<td>High</td>
<td>Very low</td>
<td>Low</td>
</tr>
<tr>
<td>Saturated fat</td>
<td>High</td>
<td>High</td>
<td>Adequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Dietary fibre</td>
<td>Very low</td>
<td>Low</td>
<td>Low</td>
<td>Adequate</td>
</tr>
<tr>
<td>Sodium</td>
<td>Very high</td>
<td>Very high</td>
<td>Adequate</td>
<td>Adequate</td>
</tr>
</tbody>
</table>


