Posters

Polyphenols and health: using cell-based assays to aid in the development of new functional foods
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Background - There is increasing consumer interest in health benefits of food. Phenolic phytochemicals are abundant micronutrients in fruit and vegetables and evidence of their health benefits is emerging.

Objective - To use cell-based assays to measure biological activity such as anti-inflammatory activity and protection from oxidative stress induced damage of fruit extracts as screens for possible health effects.

Design - Anti-inflammatory activity of four apple extracts (A, B, C and D) was measured by the inhibition of an inflammatory mediator (TNF-α) from LPS-stimulated macrophage cell line (RAW 267.4). Apoptosis or protection from hydrogen peroxide induced apoptosis of human T cells (Jurkat) after treatment with these extracts was evaluated. The phenolic composition of these apple extracts was obtained by HPLC analysis.

Outcome - Results demonstrated that the four extracts inhibit TNF-α production of LPS-stimulated macrophages at certain concentrations. The level of inhibition varies with each extract. The extent of the activity differed with the phenolic composition of the extracts.

<table>
<thead>
<tr>
<th>Extracts concentration</th>
<th>0µM</th>
<th>31µM</th>
<th>500µM</th>
<th>1000µM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cells alone^1</td>
<td>11±1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cells+ LPS^1</td>
<td>2883±45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cells+ LPS+ extract A^1</td>
<td>3227±155</td>
<td>2964±13</td>
<td>258±13</td>
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</tr>
<tr>
<td>Cells+ LPS+ extract B^1</td>
<td>1719±101</td>
<td>3258±34</td>
<td>2049±92</td>
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<tr>
<td>Cells+ LPS+ extract C^1</td>
<td>2420±9</td>
<td>3342±154</td>
<td>2304±34</td>
<td></td>
</tr>
<tr>
<td>Cells+ LPS+ extract D^1</td>
<td>2054±46</td>
<td>3132±10</td>
<td>2965±10</td>
<td></td>
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</tbody>
</table>

^1Mean ±STD. TNF-α concentrations measured in ng/ml, extracts+ unstimulated cells were the same as cells alone.

All four apple extracts showed different levels of protection against hydrogen peroxide induced apoptosis in a dose-dependent manner (0-10 µM).

Conclusion - Cell based-assays can provide preliminary evidence for the health benefits of phytochemicals and help to establish which components are present in fruit and vegetables extracts are best for preventative nutrition.

A multidisciplinary approach to weight management
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Background - Obesity is a growing problem in Australia, in the year 2000, 67% adult males and 52% adult females were either overweight or obese. A weight loss of 5-10% body weight can result in significant health benefits.\(^1\) Successful long term weight loss programs include behavioural strategies, eating diet low in fat, frequent self monitoring of body weight and food intake and high physical activity.\(^2\) These strategies formed the basis of The Healthy Weight Management Program at Ballarat Health Services for overweight people for overweight and obese people with chronic health conditions.

Objective - To treat overweight and obese patients who have two or more comorbidities, with a multidisciplinary group program.

Design - A 12 month program was offered with an initial phase being a 6 week course covering diet, lifestyle and behavioural change and exercise. It was presented by a dietitian, psychologist and exercise therapist. The weekly program lasted 2 ½ hours with 1 hour spent in a gym program suited to individuals needs. Patients were expected to keep a food and activity diary during the 6 week period. The group was then followed up at week 10, 16, 26, and 52 where a review of diet, exercise and motivation took place as well as measurements.

Outcomes - The average weight loss over the 12 month period was 3.2kg which was 3.3 % of initial body weight. During the first 6 months the average weight loss was 4.9kg, which is 5.25% of initial body weight.

Conclusion - To achieve further weight loss or maintenance of weight loss in the last 6 months of the program more regular follow up and support is required. Benefits of the multidisciplinary approach included the establishment of regular activity in people who were initially unable to exercise, a feeling of increased self esteem and control over body weight. The program continues as the primary method of weight management at Ballarat Health Services.

References
1. NHMRC. Clinical practice guidelines for the management of overweight and obesity in adults. September 2003