Concurrent Session 7

Screening food-based libraries to identify antihypertensive bioactives
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Background - Development of functional foods and nutraceuticals targeted to promote cardiovascular benefits is an active area of research at present. Supporting evidence exists for several such bioactives including plant sterols, n-3 polyunsaturated fatty acids, polyphenols and peptides from various sources.

Objective - To develop and validate suitable assay systems to allow rapid screening of different food based peptide libraries in an attempt to identify potential bioactives that may possess antihypertensive properties.

Design - A rapid spectrophotometric assay to identify inhibitors of angiotensin-converting enzyme (ACE) was developed based on the method of Cushman and Cheung.¹ Other potential target mechanisms identified include scavenging of free radicals and inhibition of the action of angiotensin II at its receptor.

Outcomes - A reproducible assay for ACE activity (CV 4.1%) was established and validated using the pharmacological inhibitor captopril, and Val-Ala-Pro, a known inhibitory tri-peptide, as standards. A selection of commercially available, vegetable derived protein hydrolysates demonstrated ACE inhibitory activity (wheat, 20-50%; soy, up to 20%; rice, 10-70% and pea, 10-60%). In some cases it was possible to enhance this activity by further fractionation.

Conclusions - The ability of some food-based fractions to inhibit ACE was demonstrated. By targeting different mechanisms of antihypertensive action, the potential exists to improve the efficacy of dietary interventions for lowering blood pressure.

References

An economic evaluation of the re-introduction of a school milk program
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Background - Osteoporosis is a major cause of morbidity and mortality in Australia incurring an annual health care cost of approximately $1.9 billion.¹ Although osteoporosis is a disease of the elderly it has been predicted that increasing peak bone mass during growth will significantly delay the onset of osteoporosis during aging², thereby offering improved health outcomes and health care savings over time.

Objective - To determine the potential cost-effectiveness of school milk programs (SMP) compared to current practice.

Design - A semi-Markov model was developed to predict the impact of SMP upon health outcomes and health care costs over life-expectancy. The model allows for transitions between 10 health states comprising 8 different hip and vertebral fracture states, good health, and death. These probabilities were derived from published epidemiological literature, including Australian data wherever possible. The effect size was estimated as an average increase in peak BMD of 1.5%.

Outcomes - Cumulative life-years and quality-adjusted life-years (QALYs) are predicted for cohorts of current children and a hypothetical intervention respectively. Estimated incremental life-years were 0.0096 and 0.0016, and QALYs were 0.0476 and 0.0148 for females and males respectively. Health outcomes and costs are systematically compared to assess cost-effectiveness, that is, ‘value-for-money’ of SMP.

Conclusions - As expected, gender significantly affects the predicted impacts of SMP. The impacts upon life-expectancy are minimal and provide weak support for funding of SMP. Including morbidity impacts through evaluation of QALYs greatly strengthens the funding argument. At a cost per QALY of less than $25,000, SMP compares favourably with many other health care interventions receiving funding support.

References