suppressive effect of limonin, one of the citrus lemuroids, on intestinal polyp development in *Apc*-mutant Min mice.

Methods: Five-week-old female $Apc^{M9n/+}$ (Min) mice were fed a basal diet (untreated control group; $n = 10$) or a diet containing 500 ppm limonin for 8 weeks (limonin-treated group; $n = 10$). The intestinal tracts were removed and the polyp numbers, sizes and distributions assessed under a stereoscopic microscope. The number of polyps per mouse in each size class is given as mean $\pm$ SD values, with statistical analysis using the Student *t*-test.

Results: Administration of 500 ppm limonin to Min mice for 8 weeks did not affect body weight, food intake or clinical signs throughout the experimental period. The total number of polyps decreased in the limonin-treated group compared to those of the untreated control group (34.0 ± 10.5 vs 25.6 ± 5.2; $p < 0.05$). Strong reduction of polyps was observed in the distal part (18.6 ± 7.2 vs 13.2 ± 3.3; $p < 0.05$). Administration of limonin significantly reduced the numbers of polyps sized < 0.5 mm and 1.0 to 1.5 mm in diameter ($p < 0.05$ vs. 0 ppm). Moreover, expression levels of c-Myc mRNA in the polyp part tended to be reduced by administration of limonin.

Conclusions: Our results suggest that limonin might be useful chemo-preventive agent against intestinal carcinogenesis.

THE EFFECT OF *CARALLUMA FIMBRIATA* EXTRACT ON METABOLIC PARAMETERS IN HIGH-FAT FED WISTAR RATS

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Background/Aims: The aim of this study was to investigate the effect of an Indian herb, *Caralluma fimbriata* extract on metabolic parameters in Wistar rats fed a high-fat diet.

Methods: Male Wistar rats ($n = 20$) were randomly divided into two groups. After inducing obesity, group two was supplemented with *C. fimbriata* extract for eight weeks, while group one received placebo. The following metabolic parameters were assessed at baseline and post intervention: food intake, body composition, blood pressure, glucose tolerance, insulin sensitivity, urine volume, and sodium excretion. Post intervention organ weights, abdominal circumference, total cholesterol, triglycerides and liver lipid content were measured. Delta change and differences between groups was analysed using Student's *t*-test.

Results: The major findings were a significant reduction in food intake (-0.22 g/day) and abdominal circumference (-1.8 cm) in the *C. fimbriata* supplemented group compared to control ($p < 0.05$). Systolic & diastolic blood pressure was also significantly reduced in the *C. fimbriata* supplemented group compared to baseline (systolic -7.67 mmHg; diastolic -12.41 mmHg).

Conclusions: This study suggests that *C. fimbriata* extract shows potential appetite suppressing, antiobesity and antihypertensive effects on high-fat fed rats. It may play a role in the treatment and management of obesity and metabolic syndrome.

FRUIT AND VEGETABLE INTAKE AND BODY MASS INDEX IN A LARGE SAMPLE OF MIDDLE-AGED AUSTRALIAN MEN AND WOMEN

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Background/Aims: Globally, dietary guidelines recommend increased intakes of fruits and non-starchy vegetables for the prevention of chronic diseases.

Methods: Secondary analysis was performed in 246,995 Australian adults aged 45+ years recruited for the "45 and Up" cohort study. The association between BMI and habitual fruit and vegetable (F&V) consumption, assessed using validated short questions was determined using multinomial logistic regression modelling, by sex.

Results: Compared to the referent normal weight category (BMI 18.5 - 24.9 kg/m^2), the odds ratio (OR) of being in the highest vegetable intake quartile was 1.09 (95%CI: 1.04, 1.14) for overweight and 1.18 (95%CI: 1.12, 1.24) for obese women. For fruit, the association was in the opposite direction for overweight (OR 0.85; 95%CI: 0.80, 0.90) and obese (OR 0.75; 95%CI: 0.69, 0.80) women. Obese and overweight women were more likely to meet the "Go for 2&5" targets. In contrast, overweight men were less likely to be in highest intake quartiles for vegetables (OR 0.92; 95%CI: 0.89, 0.96) and fruit (OR 0.94; 95%CI: 0.90, 0.98) but this was not found for obese men.

Conclusions: These data suggest that public health approaches to increase fruit and vegetable intake may be beneficial strategies for weight management in men but further investigation of the positioning of F&V within overall diets is warranted in the case of middle-aged women.

DEVELOPMENT OF AN *IN VITRO* ASSAY TO ADEQUATELY ASSESS PLANT PROTEIN DIGESTIBILITY

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Background/Aims: Plant protein digestibility is affected by the presence of starch and the plant cell wall (PCW) as well as physiological changes during upper gastrointestinal (GI) digestion. Hsu's (1977) multi-enzyme method is commonly used to assess plant protein digestibility. However, it does not take into consideration the physiological changes that occur during oral and upper GI digestion phases, and therefore may simplify plant protein digestibility. This study aims to develop an *in vitro* plant protein digestibility assay that represents human digestion adequately by taking into consideration the presence of starch and the physiological changes that occur in the oral cavity to the small intestine (SI).

Methods: Sorghum was used to assess differences in protein digestion between the multi-enzyme method and the proposed enhanced *in vitro* assay. Released protein and peptides were characterised by protein content determination and sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) analysis.

Results: Taking into account the changes that occur with oral and SI digestion improved sorghum protein digestibility to ~25%. Polymeric proteins were able to be further hydrolysed to oligomers and monomers during SI digestion, demonstrating improved digestion.

Conclusions: The increased protein digestibility by including an oral processing indicates that physical breakdown of the PCW and starch is important in enhancing protein digestibility and absorption in the SI. This new enhanced method may be more accurate in determining plant protein digestibility than the commonly used multi-enzyme assay as it takes into consideration bioaccessibility and physiological considerations.

TRANSFORMED OILSEED LAND PLANT PRODUCING LONG-CHAIN *N*-3 OIL: CHARACTERISATION OF LIPIDS FROM DHA-*CAMELINA SATIVA*

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Background/Aims: A need exists for new and renewable sources of the nutritionally important long-chain ($\geq$ 20 carbons) omega-3 PUFA to supplement those from wild fisheries, in particular DHA (22:6*n*-3) used in foods fortified with DHA: infant formula and nutraceuticals, and aquafeeds. We characterised the lipid class and fatty acid (FA) composition and content of a new DHA producing oilseed from the transformed land plant, *Camelina sativa*.

Methods: Lipids were solvent extracted, analysed by Tb-Layer Chromatography with Flame Ionization Detection, fractionated using silica and FA analysed by GC/GC-MS.