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Phytoestrogen intake, excretion and markers of bone health in Australian womenK Hanna¹, J Wong², C Patterson¹, S O'Neill², P Lyons-Wall¹¹School of Public Health, Queensland University of Technology, QLD 4059²Betty Byrne Henderson Centre, Royal Brisbane & Women's Hospital and The University of Queensland, QLD 4006

Background – Phytoestrogens may be protective against osteoporosis due to their ability to exert oestrogenic actions on bone cells in postmenopausal women with low serum oestrogen concentration.

Objective - To examine the association between usual intake of isoflavonoids and lignans and biomarkers of bone health in a group of Australian women.

Design – Subjects were a representative group of 500 women aged 40-80 y, participating in the Brisbane Longitudinal Assessment of Ageing in Women (LAW). Intake over the previous month of isoflavonoids and lignans from food and supplements was assessed by a phytoestrogen frequency questionnaire. Bone mineral density (BMD) of femur, total hip and lumbar spine were measured by dual energy x-ray absorptiometry. Bone formation was assessed by serum bone alkaline phosphatase (bone ALP). Potential confounding factors were evaluated, including energy, macronutrient and calcium intakes, body mass index (BMI), smoking, alcohol, hormone therapy, menopause status, age and activity. Women were divided into quartiles of intake and analyses were conducted in the total group and subgroup with lower BMI (≤ 25 kg/m²) (n=200) or osteoporosis/ osteopaenia (n=219).

Outcomes - Bone ALP was significantly higher in the lowest compared to higher three quartiles of isoflavonoid intake (P=0.005) for the total group (P=0.005) and subgroup with lower BMI (P=0.002); this remained significant in the lower BMI group after adjustment for confounding factors ($F_{2,178}=3.21$, P=0.024). There were no significant associations between isoflavonoid intake and BMD at any site, or between lignan intake and any bone markers.

Conclusions - Data suggest that higher isoflavonoid intakes, especially in women with lower BMI, are associated with lower bone ALP, a short term marker of bone formation and turnover. The clinical significance of this finding and whether this effect is adequate to ameliorate age-related decline in BMD, will be explored in subsequent years of the LAW study.

Carotenoid concentrations in asthmatics versus healthy controlsLG Wood¹, ML Garg², RJ Blake², PG Gibson¹¹Respiratory and Sleep Medicine, Hunter Medical Research Institute, John Hunter Hospital, NSW, 2310²Nutrition and Dietetics, School of Health Sciences, Faculty of Health, University of Newcastle, NSW, 2308

Background - Oxidative stress and impaired antioxidant defences are increasingly recognised features of asthma. Carotenoids, such as lycopene, are potent antioxidants that are obtained from dietary sources and may protect against oxidative stress. Epidemiological evidence indicates that carotenoids and carotenoid-rich foods, including fresh fruit, vegetables, tomatoes and tomato products, are protective against asthma.

Objective - To examine carotenoid levels in blood and induced sputum of asthmatics compared to healthy controls.

Design - Peripheral blood and sputum (induced during a hypertonic saline challenge) were collected from asthmatics (n=9) and healthy controls (n=7). Carotenoids in blood and sputum were analysed using HPLC.

Outcomes - Whole blood concentrations of total carotenoids and lycopene were low in asthma compared to controls. Plasma and sputum total carotenoid (r=0.835, p=0.001) and lycopene (r=0.771, p=0.005) concentrations correlated.

Carotenoid	Whole blood concentrations (mg/L)	
	Controls	Asthma
Lycopene	0.13 (0.04-0.47)	0.03 (0.02-0.10)*
Lutein	0.09 (0.05-0.10)	0.05 (0.03-0.07)
α -carotene	0.02 (0.00-0.04)	0.01 (0.00-0.02)
β -Carotene	0.17 (0.02-0.42)	0.04 (0.02-0.12)
β -cryptoxanthin	0.07 (0.04-0.20)	0.04 (0.01-0.06)
Total	0.59 (0.14-1.23)	0.24 (0.08-0.35)*

* p<0.05 versus Controls; Values are Median (Q1-Q3)

Conclusions - We conclude that asthmatics are relatively deficient in carotenoids, increasing susceptibility to oxidative stress. Dietary supplementation with carotenoids may be beneficial in asthma.