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Selenised dairy protein and colon cancer inhibition in AOM induced rats

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Background: Selenium is potentially important in cancer prevention as has been shown by Clark *et al*[1] where 200µ Se/day as Se yeast provided over 4.5 y was associated with a halving of colon, lung and prostate cancers in the 11 y study. The form of Se most effective for anticancer effects is of interest, and food forms containing selenocysteine or selenomethionine are common and dairy foods could be a significant source of Se.
Objective: To examine the influence of high Se diet fed as Se enriched casein relative to yeast Se supplements on colon tumour expression in the azoxymethane induced rodent model.
Design: Selenised casein was fed to 25 male Sprague-Dawley rats at 1ppm in diet, and compared with yeast selenium (Selplex™ Alltech Biotechnology P/L, Victoria) supplemented diets (1 and 4 ppm Se) and control diet (no Se added, 0.05ppm Se) fed rats. After 3 w on these diets rats were induced with two doses of azoxymethane (AOM- Sigma Chemicals) at 15mg/Kg BW given one week apart. The rats were maintained on diets for 26 w.
Outcomes: There were significant reductions in colonic tumour incidence (rats with tumours) and burden (tumours/rat) with selenised casein relative to control, not seen with the yeast Se treatments. There was an effective reduction in the benign (B) and malignant (M) tumours in the selenised casein group relative to control and other Se

Diet Treatment	Tumour Incidence	Tumour Burden		Significance
Control	56	1.08	29/3 (B/M)	
Se casein (1ppm)	40*	0.52**	16/2 "	* p<0.05
Se yeast (1ppm)	61	1.43	36/6 "	**p<0.02
Se yeast (4ppm)	61	1.26	25/8 "	

yeast treatments.
Conclusions: When fed at supplemental levels (1ppm) in the diet, while still considered safe (chronic toxicity is associated with >5ppm Se in diet) Se in dairy protein was very effective at reducing tumours of the colon, an effect not seen when fed in equivalent amounts as Se yeast supplements.
1. Clark LC *et al*. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin. A randomized controlled trial. Nutritional Prevention of Cancer Study Group. *JAMA 276:1957-63, 1996.*

Nutritional and anti-inflammatory strategies in the treatment of advanced colorectal cancer – a pilot study

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Background - Patients with advanced cancer become nutritionally compromised and experience considerable wasting, due to the cachectic inflammatory processes apparent in cancer. The impact of nutritional status on the tolerance to anti-neoplastic therapy has been known for some time, however prognostic nutritional assessment tools, prognostic nutritional indicators and nutritional intervention strategies have been neglected in predicting and modifying chemotherapy treatment.
Objective – To determine the degree of malnutrition in patients with advanced colorectal cancer, and to determine if nutritional intervention using a source of concentrated Eicosapentanoic acid (EPA) will help maintain or improve the patients' nutritional and "quality of life" parameters, and improve their tolerance to chemotherapy treatment.
Design – 15 of 25 patients with advanced colorectal cancer have been recruited. They are instructed to take the EPA (2g) - containing high protein energy supplement for 3 weeks prior to commencing Irinotecan chemotherapy, and then for 6 weeks during 3 cycles of Irinotecan treatment. Nutritional parameters and inflammatory markers are collected at baseline, at the end of week 3 and at the end of week 9. Nutritional parameters include PGSGA, triceps skin fold, bioelectrical Impedance, and quality of life. The inflammatory markers measured include CRP, IL6 and IL1.
Outcome – 15 patients have been accrued into the trial. 13 patients have completed to the end of 3 weeks, 8 have fully completed the trial and 2 are currently on trial. 5 patients have withdrawn before completion. After 3 weeks of taking the EPA-supplement, using a Wilcoxon Signed Ranks test, there were no significant changes in nutritional parameters, indicating patients are maintaining their nutritional status. There is a significant increase in the inflammatory marker over 3 weeks. Due to small numbers data at 9 weeks cannot be analysed. Of those who have completed only 2 patients experienced gr.3 diarrhoea, and 1 patient experienced gr.3 neutropenia.
Conclusion – Animal studies suggest that EPA reduces the toxicity to Irinotecan. The data suggests the EPA in addition to a high energy/protein diet, helps patients to maintain their nutritional status whilst also helping patients tolerate their treatment with fewer side-effects.