NSA Poster Presentations: Friday 13 August 2004

Lyprinol™: a potential preventive treatment for inflammatory bowel disease (IBD)?

D Tenikoff[1], KJ Murphy[2], M Le[1], RN Butler[1], GS Howarth[1], PRC Howe[2]
[1]*Child Health Research Institute, Women's & Children's Hospital, SA 5006*
[2]*Nutritional Physiology Research Group, University of Adelaide and University of South Australia, SA 5005*

Background- Fish oil and the stabilised lipid extract of New Zealand Green Lipped Mussel (Lyprinol™; LYP) are considered beneficial in treating arthritis and other inflammatory conditions. Unlike fish oil, it is uncertain whether any benefit seen with LYP is due to its omega-3 (ω3) fatty acid content. We compared the effect of LYP and fish oil pre-treatments on experimental induction of IBD in mice.
Methods- Male C57BL/6 mice aged 6 weeks were gavaged daily for 13 days with 150µl of olive oil (OO, n=7), LYP (5mg in OO; n=8) or fish oil (FO, 55mg EPA/DHA; n=8). Mice consumed 2% dextran sulphate sodium (DSS) for 6 days from day 7 to induce colitis. Body weight and disease activity index (DAI) scores were recorded daily; colonic inflammation was assessed by myeloperoxidase (MPO) activity and histopathologic damage to the ileum and colon.
Results- FO treatment had no significant benefit compared with OO. By day 12 of the trial, OO treated mice had gained 15±2% body weight, FO treated mice had gained 6±5% and LYP treated mice had gained 21±3%: LYP treated mice had a lower DAI score (0 vs. 1 for OO, 4 for FO). Compared with FO, LYP treated mice had smaller crypt area losses (distal colon), lower caecum and colon weights and a trend for lower overall colitis severity in the distal colon. MPO activity was not significantly affected by either LYP or FO vs. OO (see table).

	Units	OO	FO	LYP	P value (LYP vs FO)
Distal colon					
Crypt area	% tot mucosal area	39.8 ± 10.1	24.6 ± 9.0	48.9 ± 9.4	0.03
Colitis severity	median score	5 (1-10)	9 (5-15)	4 (1-14)	0.07[1]
Colon weight	mg	154 ± 5	151 ± 7	133 ± 7	0.05
Caecum weight	mg	98 ± 7	120 ± 12	88 ± 7	0.002
MPO activity	MPO units/gm	15 ± 0.06	30 ± 0.08	15 ± 0.12	0.12

One-way ANOVA, with Tukey-Kramer Post test; [1]Kruskall-Wallis Test (non-parametric ANOVA).

Conclusions- These findings indicate that LYP may be potentially useful in ameliorating symptoms of IBD. The lack of effect of FO indicates that the benefit of LYP is attributable to components of the stabilised lipid extract other than its ω3 content. A dose-response evaluation of LYP in experimental IBD is warranted.