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Does the use of a wheat dextrin fibre supplement improve bowel performance in renal dialysis patients? – a pilot study

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Abstract

Background: Constipation is common within renal dialysis patients. Current practice for the management of constipation in renal dialysis patients in Northland DHB involves prescribing laxatives and attempting to alter dietary fibre intake through dietary measures. These methods are however often ineffective and laxatives can have unwanted side effects. The use of a fibre supplement for the treatment of constipation within this patient group would be ideal; however, the currently subsidised fibre supplement in New Zealand needs to be consumed with fluid and is therefore not suitable for renal dialysis patients with severe fluid restrictions. A wheat dextrin fibre supplement is available in New Zealand and this product can be mixed into food, therefore requiring no water. This makes a wheat dextrin fibre supplement ideal for renal dialysis patients as a way to increase their fibre intake in an attempt to improve bowel performance.

Aim: To examine the effectiveness of a wheat dextrin fibre supplement on bowel performance in free living end stage renal failure patients who are currently receiving either peritoneal or haemodialysis within the Northland DHB.

Methods: Haemodialysis (HD) or peritoneal dialysis (PD) patients who were currently taking laxatives were recruited for this cross-over, single blind intervention study (n =7). After a two week observation stage (OBS), subjects consumed up to 22 g of wheat dextrin fibre supplement (WD) per day or the equivalent of a maltodextrin placebo (PB) for four weeks. Patients then switched treatments after a two week washout period. In all three study stages, subjects completed a prospective patient held record measuring stool frequency, stool form, laxative use, and the quantity of supplement consumed in the WD and OBS stages. During the final three days of each stage, subjects completed a 28 question quality of life (QOL) questionnaire designed to assess QOL with reference to constipation over the two weeks immediately prior.

Results: No significant differences were found between the OBS, WD or PB stage for laxative use ($p =0.299$), stool frequency ($p =0.653$), stool form ($p =0.549$), percentage of ideal stools formed ($p =0.253$), or QOL measures ($p =0.181$). When determining if WD had an effect in some individuals, it was found that one subject showed a clear increase from 4 stools/week in the OBS stage to 14 stool/week in the WD stage and five stools/week in the PB stage. Another subject managed to decrease their laxative use by 31% in the WD stage compared to the OBS

and PB stage. The percentage of stools that were ideal increased by 20% or more from the OBS to WD and/or PB stage in 67% of subjects.

Conclusion: This pilot study found the use of wheat dextrin to improve bowel performance in some individuals. Due to low subject numbers in the analysis (n =6), it was not surprising that no significant results were found between any stages of the study for any objectives, however individual subjects showed WD improving stool frequency, stool form and reducing laxative use compared to placebo. Overall, this pilot study has highlighted the difficulties in carrying out such a trial in renal dialysis patients, and these should be taken into account when designing future trial in this population.

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Abbreviation List

WD	Wheat dextrin
PB	Placebo
OBS	Observation
QOL	Quality of life
CKD	Chronic Kidney Disease
ESRF	End stage renal failure
RRT	Renal replacement therapy
KDOQI	The Kidney Disease Outcomes Quality Initiative
MDRD	Modification of diet in renal disease
GFR	Glomerular filtration rate
NHANES	National Health and Nutrition Examination Survey
HD	Haemodialysis
PD	Peritoneal dialysis
CAPD	Continuous ambulatory peritoneal dialysis
PHGG	Partially hydrolysed guar gum
BSFS	Bristol stool form scale
IBS	Irritable bowel syndrome
GI	Gastrointestinal
GOS	Galacto-oligosaccharide
FOS	Fructo-oligosaccharide