FACTSHEET

EVIDENCE FOR THE USE OF PROBIOTICS ALONGSIDE CONVENTIONAL CANCER TREATMENT

GASTROINTESTINAL SIDE EFFECTS

The gut is home to trillions of microbes that line its entire mucosal wall and play an essential role in supporting immune and digestive systems. Up to 70% of the body's immune cells are located in the gut and the cells lining the intestinal wall[1], which multiply and replace much faster than any other cells in the human body. This makes the gut cells more susceptible to damage by any conventional cancer therapy aimed to destroy unwanted cancer cells near this area[2]. Those undergoing conventional bowel cancer treatment are particularly susceptible to gastrointestinal side effects. Cancer treatment, chemotherapy and radiotherapy in particular, can profoundly disrupt the gut lining and subsequent nutrient absorption and immune function, and disturb the important microflora balance. This can lead to gut complications during and after treatment, such as malnutrition, weight loss, nausea[2] and diarrhoea in more than 80% of patients[3]. These known side effects are often a major cause of dose limitations[2] during treatment. Post-operative septic infection (often derived from the gut)[4] remains a major factor affecting patient survival rates[5].

PROBIOTIC USE

The use of probiotics is increasingly being considered alongside conventional cancer treatment to potentially reduce these gut complications. Potential benefits of probiotic use include rebalancing the gut flora, improving resistance to infection, controlling inflammation and lessening damage to the gut lining (mucositis)[2]. Results of clinical studies appear promising, particularly with regards to providing protection against infection and diarrhoea, and improving gut related quality of life long after conventional treatment[6].

Paper	Dosage	Probiotic	Outcomes
Liu *et al*, 2011[5]	2.6 x 10^{14} CFU/d (260 trillion)	*Lactobacillus Plantarum, L.acidophilus & Bifidobacterium longum*	Given orally for 6 days pre-**colectomy** and 10 days post-operatively the probiotic group (50 patients) had less diarrhoea and infectious-related complications, while restoring a healthy gut lining and microflora balance.
Yamashiro *et al*, 2010[7]		*Bifidobacterium breve*	Randomly assigned to 42 **children** undergoing **chemotherapy**, significantly lowering frequency of fever and use of intravenous antibiotics while retaining a balanced microflora and preventing damage to the gut lining.
Chitapanarux *et al*, 2010[8]	4 x 10^{9} CFU/d (4 billion)	*Lactobacillus acidophilus* and *Bifidobacterium bifidum*	In 63 patients undergoing **pelvic radiotherapy**, those randomly assigned the probiotic 7 days before and during treatment significantly reduced their use of anti-diarrheal medication and their stool consistency was significantly improved. Grade 2-3 diarrhoea was observed in 45% of the placebo group and 9% of the probiotic group.
Osterlund *et al*, 2007[9]	1–2 x 10^{10} CFU/d for 24 weeks (10-20 billion)	*Lactobacillus rhamnosus*	150 **colorectal cancer** patients randomly assigned a probiotic during monthly or bimonthly postoperative adjuvant **chemotherapy**, experienced less diarrhoea, abdominal discomfort, needed less hospital care and had fewer chemotherapy dose reductions due to bowel toxicity.
Salminen *et al*, 1988[10]	2 x 10^{9} CFU/d (2 billion)	*Lactobacillus acidophilus*	In 24 female patients suffering from **gynaecological** malignancies the probiotic appeared to prevent **radiotherapy**-associated diarrhoea.

PREVENTION

An imbalance of gut flora, and subsequent inflammation, has by some researchers been associated with the initial development of cancer, namely bowel cancer[11,12,13]. A probiotic supplement could therefore, be considered potentially beneficial for use long before and after treatment.

CONCLUSION

However, much further work is needed in this area before probiotics can be recommended routinely to cancer patients. A major difficulty in proving probiotic benefit is that studies are often conducted independently with varying methods and strains (types)[6]. Despite this, probiotics are widely considered safe to take and on searching a mainstream trial database, no results were returned for probiotics having adversely affected cancer treatment or causing serious side effects. As different probiotic strains have been shown to have slightly different beneficial effects, a multi-strain probiotic could be considered a more viable option.

References

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