

Title: Probiotic Safety and use in Oncology

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Reference:

Redman MG, Ward EJ & Phillips RS. The efficacy and safety of probiotics in people with cancer: a systematic review. Annals of Oncology 25: 1919–1929, 2014 doi:10.1093/annonc/mdu106. Published online 11 March 2014

Design:

A systematic review was carried out to collect, analyze and synthesize all available data on the efficacy and safety of probiotics in people with cancer. Eleven studies (N = 1557 participants) were included for assessing efficacy. Seventeen studies (N = 1530) were included in the safety analysis.

Key Findings:

Results show that probiotics may reduce the severity and frequency of diarrhea in patients with cancer and may reduce the requirement for anti-diarrheal medication, but more studies are needed to assess the true effect. Five case reports showed probiotic-related bacteraemia / fungaemia / positive blood cultures.

Clinical Discussion:

Probiotic use has shown both clinically and in numerous studies to be a very safe and effective therapy for many complaints. The use of probiotics in the setting of oncology has been of concern in some quarters of medicine due to both theoretical concerns surrounding immunosuppressed patients and live organisms as well as some case reports of sepsis. This systematic review provides a reasonable summary of the data and types of studies looking at both potential positive effects on probiotic use in oncology patients as well as the potentials for harm.

On the side of benefits the review does note that in the eleven studies assessed (n = 1557) that there was a trend toward better diarrhea control as well as a need for less anti-diarrheal medication. As many cancer therapies do create significant levels of gastrointestinal complaint, and many patients have side effects from the commonly prescribed anti-diarrheal medications, this effect would argue that probiotic use would be a quality of life as well as cost benefit. A limitation of the review is that the studies reviewed were not looking for many other benefits (gastrointestinal integrity, gut immune function etc.) of the probiotic therapy.

The portion looking at potential harm does a very adequate job of delineating the case reports of infections and the relative implications of each case. These case reports are often used to justify the recommendation of “no probiotics during chemotherapy and radiation”. Additional strength to that argument is given from the theoretically based concern of giving live organisms to people who are immune suppressed. Both of these factors should give pause for the provider to consider the risks and benefits of probiotic therapy in immune suppressed patients. In this review of seven studies (n = 1530) there were five case reports of infections. Of these five cases three may actually have been causally related to an oral probiotic product (In one case the probiotic was contaminated with pathogenic fungal organisms and in two cases the oral use of *Saccharomyces boulardii* was related to growth of *Saccharomyces cerevisiae* in blood cultures). The incidence of infectious illness related to probiotic use in this review is 0.002 to 0.003 % (3 of 1530 cases to 5 of 1530 cases). The incidence of suppressive chemotherapy induced bacteremia has been estimated at up to 10% in one review (Ann Oncol (2010) doi: 10.1093/annonc/mdq442). Infections and sepsis are to be avoided at all costs in oncologic patients, but a rational look at the relative risks do not appear to exclude probiotic use based on safety.

Conclusions:

Having a great deal of experience in clinical oncology I have had to consider the risk benefit of each therapy we employ. This has caused me to be critical of our own process and monitor these potential risks carefully. In our oncologic practice spanning twenty years, and many of the past ten years including oncology research experience, we have not seen a case of probiotic induced infection or sepsis. Our clinical practice is to use only human microflora strains (HMF) and avoid *Saccharomyces* products as well as “soil based organisms” during active immune suppressive therapies. Proper patient education and monitoring is essential to maximize benefit and minimize risk. It is my experience that the use of probiotic therapy as described above in the oncologic patient is of high benefit and of low relative risk.