

## Probiotics in clinical practice.

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### Description

Not so long ago, dysbiosis was found to be a key element in the development of most cases of diarrhea, mainly in antibiotic-associated colitis. Probiotics appeared as a miraculous weapon, acting as complement to antibiotics, and took little time until it was present in every prescription before or after initiating an antimicrobial agent.

Applications for the use of probiotics have been extended to other also not so benign conditions, as hospitalized patients with critical illness and intensive care, in which gut microbial imbalance possibly leads to increased susceptibility to infection, sepsis and organ failure [1,2].

Knowledge on gut microbiota is advancing and the topic is still in vogue, but despite the great variety of probiotic preparations available in the therapeutic arsenal, the exact role of these agents in various clinical contexts has not been fully established and their safety profile is still a matter of debate in certain populations [3].

A meta-analysis on the use of probiotics for the prevention of antibiotic-associated diarrhea and *Clostridium difficile* infection (CDI) treatment revealed that *Saccharomyces cerevisiae* var. *boulardii* was the only effective choice [4]. However, a more recent systematic review and meta-analysis concluded that there is insufficient evidence to support a recommendation for the combined use of probiotics and antibiotics to treat CDI [5,6], mainly because available studies are heterogeneous, having used different strains as well as variable probiotic doses, treatment durations, and administration modes [7].

The use of *Saccharomyces cerevisiae* var. *boulardii* based probiotic as supplementary therapy in cases of infectious diarrhea is well-established in the literature and clinical routine, despite the inconsistent evidence of benefit. In healthy patients, studies show that probiotics are safe, without adverse effects [8,9]. However, in critically ill patients, with severe systemic gastrointestinal disease, admitted to intensive care units, in use of mechanical ventilation or central venous catheter, treated with broad spectrum antibiotics, or in individuals who are immunosuppressed as a result of other disorders or medication use, the risk of fungemia associated with probiotics, especially *Saccharomyces boulardii*, is high [10,11].

Immunosuppression related to critical illness or treatment and the handling of tubes and catheters for the administration of probiotics have been identified as risk factors for fungemia caused by *Saccharomyces*. Clinical practice guidelines [12] also recommend against the prescription of *Saccharomyces cerevisiae* var. *boulardii* probiotics to patients with severe

or recurrent *Clostridium difficile* infection, especially in the presence of critical illness.

Although recommendations of clinical guidelines, probiotics are still widely prescribed in severely ill patients and cases of fungemia keep on been diagnosed. Roy et al. [13] presented a series of seven cases of fungemia after consumption of probiotic containing *S. boulardii*, in which five of them were severely ill adults from ICU. Those patients were taking probiotic in order to prevent or to treat antibiotic-associated diarrhea and *S. cerevisiae* was isolated from blood of all those patients at least once; further clinical details were not available.

Human gastrointestinal tract and gut microbiota has great impact in every mechanism of homeostasis as well as in health maintenance and disease development [14]. The roles of probiotics are a matter of continuous research since it has been established that the benefit is not clear and safety issues are frequently reported.

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