Probiotics as the Treatment for the Visceral Pain in Gastrointestinal Disorders
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Introduction

Visceral pain

Visceral pain is the most common form of pain that human beings suffer throughout their lifetime. This kind of pain has important clinical characteristics:
- Is a pain originating in the internal organs but not evoked from all viscera.
- Diffuse and poorly localized.
- Not always linked to injury of the tissue.
- Referred to somatic structures.
- Intense motor and autonomic responses.

Irritable Bowel Disease (IBS) is mainly characterized by presence of visceral hypersensitivity and affects 3-25% of the population. Among the wide variety of treatment options the visceral pain, probiotics appear to be one of the best options.

Aims

- To evaluate whether the treatment with the probiotic species Lactobacillus and Bifidobacterium is effective reducing the intestinal hyperalgesia in IBS patients.
- Compare the efficacy of using probiotics composed with a single strain or with multispecies.
- To elucidate the probiotics’ main mechanisms that promote the intestinal antinoceptive.

Materials and methods

This project has been made by the search and extended reading of recent papers obtained from PubMed, ScienceDirect and Scopus databases, also consulting some doctoral thesis and books. The information was selected according to their relevance and date. The main keywords used were: "visceral hypersensitivity", "probiotic", "probiotic AND visceral pain", "probiotic AND IBS".

Efficacy of probiotics reducing the intestinal hyperalgesia in IBS patients

![Graph showing efficacy of probiotics in IBS patients](Image)

Figure 1. Percentage of studies that showed efficacy or non efficacy to the probiotic treatment. There are more studies that showed good response and a reduction of the visceral pain (62.5%) than studies that didn’t show effectiveness (37.5%) to the treatment with probiotics.

Figure 2. Efficacy comparison between the use of a single probiotic strain vs multispecies. From all studies where patients showed an improvement in the visceral pain, 45% used a single probiotic strain and 55% multispecies. There aren’t efficacy differences between them.

Results

Mechanism of action of probiotics

Current evidence indicates that different probiotic strains mediate their effects by a variety of different mechanisms that are dependent on the dosage employed, the specific strain, as well as the frequency of delivery.

Although the exact mechanisms of action of probiotics for the reduction of visceral pain are not known, several have been proposed.

![Mechanism diagram](Image)

Figure 4. Lactobacillus acidophilus NCFM induces the expression of MOR1 and CB2 in epithelial cells. (Koussé et al. Nat. Med. 13, 35-7 (2007)).

Conclusions

- Evidence suggests that probiotics offer a promise for the treatment of IBS patients. They have shown efficacy reducing the visceral pain and there are several mechanisms involved in this effect that are species-specific.
- Future studies are needed about best strains, use of single or mixtures probiotics, dosis and to understand better the mechanisms involved in antinoceptive.

References