Probiotics on the management of Inflammatory Bowel Disease
A good alternative?

Universitat Autònoma de Barcelona

SEGURA ARIMONT, MARTA

Biomedical sciences, Universitat Autònoma de Barcelona

Universitat Autònoma de Barcelona

Introduction

Inflammatory bowel disease (IBD) is a chronic pathological condition in which a variable part of the luminal layers of gastrointestinal tract becomes injured. This pathology includes **Ulcerative Colitis** and **Crohn's Disease**. Its etiology is ignored, but it is known that involves the interaction of different factors, among which highlights the intestinal **microbiota**. The nature and mechanism of this interaction is already unknown. Since this pathology evolves to relapse, objectives of the treatment are to induce, and overalls to maintain, a state of clinical remission trying to reduce the frequency and duration of relapses.
With that purpose, and relating it with the microbiota role on IBD development, **probiotics** have been focused as a possible treatment, and they are being tested in clinical trials.

Aims

- To determine the role of the intestinal microbiota in a physiologic situation and in the development of IBD.
- To determine and to value those probiotics that are being tested for the treatment and/or prevention of the relapses and/or remissions of IBD in human.
- To relate the observed effects of this probiotics with their action mechanism.

Methods

➢ Bioinformatic search of the appropriate scientific literature based on PubMed (NIH). Fields need to be limited at date and publication type (review, clinical trial).
Key words → Probiotic AND IBD, probiotic AND mechanism of action, gut microbiota
➢ Specific books of interest, to higlight: Prats, G. in *Microbiol. y Parasitol. Médicas* (Editorial Médica Panamericana S.A., 2012), Barcelona, Spain.
➢ For potential assessment of clinical evidence, 20 clinical trials have been chosen.

Microbiota on health and disease

Microbiota (normal~): heterogeneous group of microorganisms that colonize the mucous of the whole organism.
Among their functions there are included:
→ First defense VS pathogens
→ Contributes to the maturation of immune system (IS) being a stimulus for it

Evidence: to expose an germ-free animal to microorganisms induces changes in their genetic expression (even at immune level)

Outcome:

Fig. 1 – IBD pathogenesis paradigm

IBD:
- ↑ frequency of dysbiotic microbiota
- Inflammatory process → causal relationship unknown
- ↑ potential pathogenic bacteria
- ↓ protective role bacteria

Probiotics: mechanisms of action

Probiotic: alive and non-pathogenic microorganisms whose intake constitute some benefit for the health.

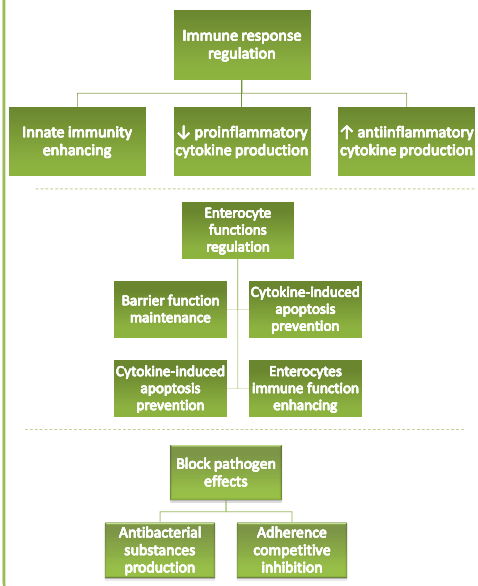
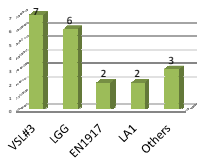


Fig. 2 – Probiotic's mechanisms of action.

IBD & probiotics: toward the clinical

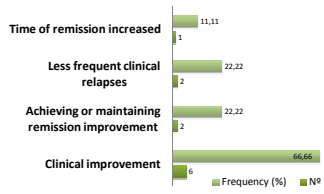
IBD probiotics management is very heterogenic in material, methods or objectives and results.
Comparison of **20 clinical trials** shown:

Probiotics



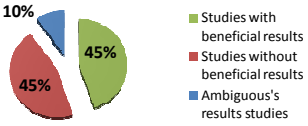
Graphic 1. Variety of the usage of probiotics.

Challenges



Graphic 2. Evaluated parameters from the use of probiotics on IBD management.

Results



Graphic 3. Proportion of studies with positive results achieved (green), unachieved (red) and with ambiguous results (blue) from a total of 20.

Conclusions

- Although the nature of the interaction among all the factors wrapped in IBD etiology is unknown, it has been shown the importance of microbiota alterations in their pathogenesis.
- Multiple probiotics are being tested in combination of different clinical situations of IBD, as long as 45% could produce a beneficial effect in some aspect of the pathology.
- It is not possible to achieve clear conclusions as for effectiveness or optimization of the treatment, as well as neither it is possible to determine the relationship between the observed effect and the mechanism of action of probiotics.