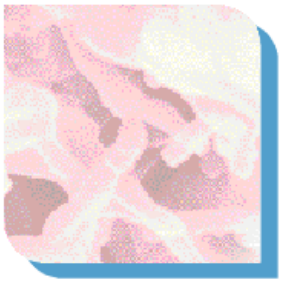
In vitro and in vivo studies on the strain *Lactobacillus helveticus* *LA 401 candisis*

The aim of the following studies is to test the capacity of the strain *Lb. helveticus* LA 401 to inhibit adhesion and/or colonisation of *Candida*.



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In vitro experiments

1 - Adhesion capacity of strains to intestinal epithelial cells

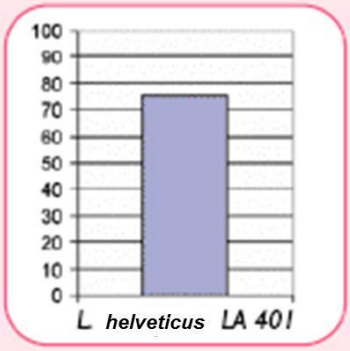
1 - OBJECTIVE

To determine the ability of strains to colonize the intestinal mucous membrane.

2 – PROTOCOL

Bacteria were radiolabelled with tritiated adenine and the level of labelled bacteria adhering to the surface of Caco-2 cells was determined by measuring the radioactivity of the cell mass (after washing). Adhesion levels are calculated with respect to a positive control, *L. lactis* BL2026 adjusted to 100%.

3 - RESULTS



The strain L. *helveticus* LA 401 has very satisfactory adhesion levels

2 – Growth test

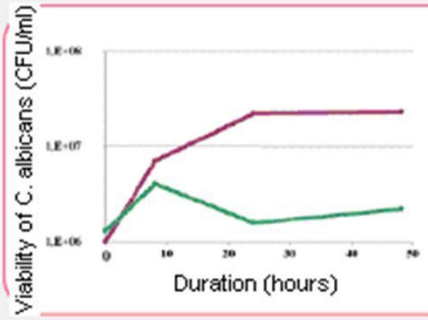
1 - OBJECTIVE

To determine whether the addition of a probiotic strain can inhibit the growth of *C. albicans* in co-culture.

2 – PROTOCOL

The probiotic strain and *C. albicans* were cultured in a specific co-culture medium (medium suited to the growth of both populations). The growth of the various populations is determined at different times. In order to evaluate the growth of each population, selective media for one or the other population were used.

3 - RESULTS



The strain L. *helveticus* LA 401 is capable of limiting the growth rate of C. albicans by a factor of 10

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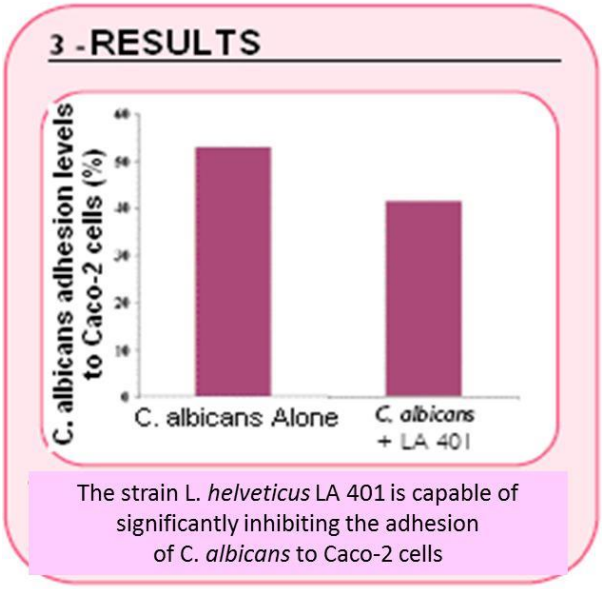
3 – Test on the inhibition of C. albicans adhesion to Caco-2 cells

1 - OBJECTIVE

To determine whether the addition of a probiotic strain inhibits the adhesion of *C. albicans* to the surface of Caco-2 intestinal cells.

2 – PROTOCOL

C. albicans yeasts were radiolabelled with tritiated adenine and the level of labelled *C. albicans* adhering to the surface of Caco-2 cells was determined by measuring the radioactivity of the cell mass (after washing). Any inhibition of yeast adhesion by the probiotic strain is determined by comparison with the adhesion levels of *C. albicans* alone and in co-adhesion.



The strain L. *helveticus* LA 401 is capable of significantly inhibiting the adhesion of C. *albicans* to Caco-2 cells

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In vivo experiments

Effect of the strain Lb. helveticus LA 401 candisis on C. albicans proliferation in vivo

1 - BENEFITS OF THIS MODEL

The immuno-competence of Balb/C mice allows them to resist many infectious agents of a pathogenic nature, especially intestinal. *C. albicans* serotype A can colonize Balb/C mice but remains in a latent state (about 50 colonies/10 µg of stool). However, when a favourable factor is introduced, *C. albicans* growth is observed (about 500 colonies/10 µg of stool). This factor, Dextran Sodium Sulfate in this case, triggers intestinal inflammation and therefore a loss of equilibrium between the host (mouse) and infectious agent (*C. albicans*) in favour of the latter.

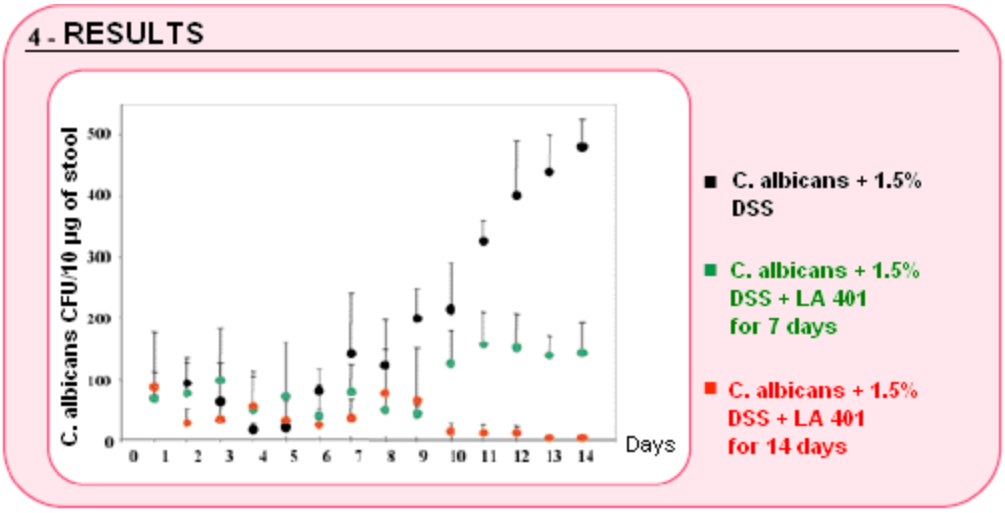
2 – OBJECTIVE

The aim of this study was to evaluate the effect of a probiotic strain, Lb. helveticus LA 401, on the colonization by *C. albicans* (in collaboration with INSERM U799, Lille).

3 - PROTOCOL

30 Balb/C mice were divided into 8 groups. Depending on the group, mice received 5.10^7 yeasts of strain *C. albicans* serotype A from a human donor. From D1 to D14, 1.5% DSS was administered daily to create inflammatory conditions favourable to yeast growth. Depending on the group, mice in the probiotic group received a daily administration of 1.10^9 CFU of *Lb. helveticus* LA 401 for either 7 or 14 days. Quantitative evaluation of colonisation or proliferation was carried out by daily retroculturing.

4 - RESULTS



5 - CONCLUSION

In this model, treatment with *L. acidophilus* makes it possible to significantly reduce intestinal proliferation of *C. albicans*.

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