Jawhara S, Habib K, Maggiotto F, Pignede G, Vandekerckove P, Maes E, Dubuquoy L, Fontaine T, Guerardel Y, Poulain D (2012). Modulation of intestinal inflammation by yeasts and cell wall extracts: strain dependence and unexpected anti-inflammatory role of glucan fractions. *PLoS One*;7(7):e40648. Epub 2012 Jul 27.

Yeasts and their glycan components can have a beneficial or adverse effect on intestinal inflammation. Previous research has shown that the presence of Saccharomyces cerevisiae var. boulardii (Sb) reduces intestinal inflammation and colonization by Candida albicans. The aim of this study was to identify dietary yeasts, which have comparable effects to the anti-C. albicans and anti-inflammatory properties of Sb and to assess the capabilities of yeast cell wall components to modulate intestinal inflammation. Mice received a single oral challenge of C. albicans and were then given 1.5% dextran-sulphate-sodium (DSS) for 2 weeks followed by a 3-day restitution period. S. cerevisiae strains (Sb, Sc1 to Sc4), as well as mannoprotein (MP) and β-glucan crude fractions prepared from Sc2 and highly purified β-glucans prepared from C. albicans were used in this curative model, starting 3 days after C. albicans challenge. Mice were assessed for the clinical, histological and inflammatory responses related to DSS administration. Strain Sc1-1 gave the same level of protection against C. albicans as Sb when assessed by mortality, clinical scores, colonization levels, reduction of TNFα and increase in IL-10 transcription. When Sc1-1 was compared with the other S. cerevisiae strains, the preparation process had a strong influence on biological activity. Interestingly, some S. cerevisiae strains dramatically increased mortality and clinical scores. Strain Sc4 and MP fraction favoured C. albicans colonization and inflammation, whereas β-glucan fraction was protective against both. Surprisingly, purified β-glucans from C. albicans had the same protective effect. Thus, some yeasts appear to be strong modulators of intestinal inflammation. These effects are dependent on the strain, species, preparation process and cell wall fraction. It was striking that β-glucan fractions or pure β-glucans from C. albicans displayed the most potent anti-inflammatory effect in the DSS model.