ORAL INTAKE OF AN EXTRACT BASED ON THE MEDICINAL MUSHROOM AGARICUS BLAZEI MURILL ALTERS LEVELS OF FECAL CALPROTECTIN AND PRO-INFLAMMATORY CYTOKINES IN PATIENTS WITH ULCERATIVE COLITIS AND CROHN’S DISEASE

Dag Tidemann Førland1, Geir Hetland3, Torstein Lyberg4, Lisbeth Sætre5, Idar Lygren5 and Egil Johnson1, 2

1Department of Gastroenterological Surgery and 2Faculty of Medicine, University of Oslo and Departments of 3Cell Therapy and 4Gastroenterology and 5Center for Clinical Research, Oslo University Hospital, Ulleval and Montebello, Oslo, Norway

Objective: To study whether the immunoregulatory Agaricus blazei Murill (AbM) mushroom extract AndoSan™ (Immunopharma) given orally, can induce an anti-inflammatory effect in patients with ulcerative colitis (UC) and Crohn’s disease (CD).

Methods: 10 patients (3 women) with UC, aged median 46 (34-66) years and 11 patients (7 women) with CD, aged 41(28-55) on stable medical therapy ingested AndoSan™ in doses 20 ml thrice daily for 12 days. Blood samples were taken before (day 0), during (days 1, 2, 5, 8, 12) and after (day 19) AndoSan™ consumption. Calprotectin was analysed in faeces at days 0, 5, 12 and 19. Plasma levels of pro-inflammatory cytokines were analyzed (Luminex) after ex vivo stimulation of blood with LPS (1ng/ml) for 6 hours before (day 0) and after AndoSan™ consumption (day 12).

Results: There was a significant reduction in fecal calprotectin (µg/g) for the UC patients; respective mean (±SD) values 2545 (1420) (day 0), 720 (724) (day 5), 538 (381) (day 12, p=0.02) and then a slight increase to 737 (650, n=6) (day 19). However, for 11 patients with CD the calprotectin levels were unaltered; respective values 382 (340) (day 0), 528 (558) (day 5), 422 (410) (day 12) and 338 (343, n=6) (day 19) (see Fig. 1). Flow cytometric analysis showed no difference in expression of reactive oxygen species or adhesion molecules (CD11b, CD11c, CD62L) in leukocytes during the experiment. Hematological parameters, including CRP, leukocytes and liver- and renal function tests, were not affected by AndoSan™ consumption. We have demonstrated that pro-inflammatory cytokines (IL-1β, TNFα, IL-6) and the Th-1 IL-2 and Treg IL-17 are reduced in plasma harvested from healthy volunteers after 12 days of equivalent intake of AndoSan™, supporting an anti-inflammatory effect in blood.

Conclusions: The commercially available AbM mushroom extract AndoSan™ significantly reduced the levels of fecal calprotectin in patients with UC but not CD, which points to an anti-inflammatory effect on the colonic mucosa. Moreover, the demonstrated reduction in plasma levels of pro-inflammatory cytokines (IL-1β, IL-6, IL-8, TNFα) and IFNγ in both UC and CD patients, substantiates the anti-inflammatory effect of AndoSan™ (Immunopharma).