Double-Blind, Placebo-Controlled Trial of Helminth Ova Therapy in Active Ulcerative Colitis (UC)

Robert W. Summers[1,a], David Elliott[1], Robin Thompson[1], Joel Weinstock[1] and Joe Urban, Jr.[2]

[1]Center for Digestive Diseases, University of Iowa Health Care (Iowa City, U.S.A.) and [2]United States Department of Agriculture (Beltsville, Maryland, U.S.A.)

BACKGROUND: Inflammatory bowel disease is prevalent in areas where parasitic helminths are rare. Helminth colonization is associated with downregulation of immune responses. We previously showed that helminths were beneficial in experimental colitis and in an open patient trial using *Trichuris suis* ova (*TSO*). Our aim was to determine efficacy and safety of treatment with *TSO* in a double-blind, placebo-controlled UC trial.

METHODS: We enrolled 54 patients with a disease activity index (UCDAI) $\geq$4 (max. possible score 12). They were randomized to receive 2500 *TSO* or placebo given orally every 2 wks for 12 wks (Phase 1). *TSO* and placebo solutions contained charcoal to mask ova. Response was defined as a decrease in UCDAI $\geq$4. After 12 wks, patients were crossed-over to the alternate bi-weekly treatment for another 12 wks with the blind maintained (Phase 2). Results were analyzed using the intent-to-treat principle.

RESULTS: Mean initial UCDAI of participants was 8.7$\pm$2.2 (SD). *TSO* and placebo groups had similar characteristics. At the end of Phase 1, 13 of 30 patients given *TSO* responded (43.3%) compared to 4 of 24 patients given placebo (16.7%), (P=0.04, two-tailed Fisher's exact test). The initial UCDAI of responders was 8.8$\pm$1.4, decreasing to a mean UCDAI of 2.8$\pm$1.4 by wk 12 (mean improvement 6.0$\pm$2.2). Serial analysis of clinical symptoms showed that responders required six wks to achieve maximal improvement. At the end of Phase 2, 56.3% given *TSO* responded, whereas only 13.3% improved with placebo (P=0.02). Combining data from both 12 wk periods showed a 47.8% response with TSO and 15.4% with placebo (P=0.002). There were no side effects or complications attributable to *TSO* therapy. No worms or ova appeared in stool.

CONCLUSIONS: In patients with active ulcerative colitis, *Trichuris suis* ova therapy is safe and efficacious. The results support the hypothesis that helminths protect against a dysregulated immune response, as seen in UC.

[a]Principal Investigator