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In both segments, O-glycosylation of mucins was strongly affected, with the appearance of elongated polylactosaminic-chain containing O-glycan structures, associated with flattening and loss of the mucus layer cohesive properties specifically in the ileum. *L. farciminis* bound to intestinal Muc2 and prevented WAS-induced functional alterations and changes in mucin O-glycosylation and mucus physical properties.
Conclusion: WAS-induced functional changes were associated with mucus alterations resulting from a shift in O-glycosylation rather than from changes in mucin expression. *L. farciminis* treatment prevented these alterations, conferring epithelial and mucus barrier strengthening.
Keywords: gut permeability, mucus layer, water avoidance stress.

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Oxidative stress balance between pro- and antiinflammatory factors in human intestinal epithelial cells

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Background: Oxidative stress plays a key role in the development of intestinal inflammatory diseases. Several pro-inflammatory mediators may generate oxidation products that exacerbate the inflammatory damage. Gastrointestinal molecules, like serotonin (5-HT), adenosine and melatonin, which are involved in intestinal physiology, have also been described as intestinal pro-inflammatory factors; whereas IL-10, a known anti-inflammatory cytokine, has also been implicated in intestinal pathophysiology.
Aim: The aim of this study was to analyze the contribution of pro-inflammatory and anti-inflammatory molecules to oxidative stress balance, as well as to assess their effect on cellular antioxidant enzymes activity, in intestinal epithelial cells.
Methods: Caco-2 cells were treated with the different molecules, and the oxidative stress was determined by measuring lipid peroxidation (MDA+4HDA) and protein carbonyl levels. The activity of the anti-oxidant enzymes (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx) was also analyzed in treated cells.
Results: Pro-inflammatory factors (5-HT, adenosine, melatonin and TNFα) increased oxidative damage in both lipids and proteins. Theses molecules, except melatonin, also inhibited the activity of antioxidant enzymes. With regard to IL-10, this cytokine was not shown to alter cellular oxidative damage, but was able to reduce the oxidative damage g by pro-inflamatory factors, and to restore their effects on anti-oxidant enxymes activities. Unexpectedly, IL-10, together with melatonin, was found to increase the antioxidant activity above the control.
Conclusions: The anti-oxidant effect of IL-10 emphasizes the role of this cytokine as a potential therapy for the treatment of intestinal inflammation induced by pro-inflammatory molecules.

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All-trans-retinoic acid (ATRA): a novel potential therapeutic agent for inflammatory diarrhea

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Background: DRA (Down Regulated in Adenoma) or SLC26A3 is the major apical anion exchanger mediating Cl^- absorption in intestinal epithelial cells (IECs). Reduction in DRA function and expression has been implicated in diarrhea associated with inflammatory bowel diseases (IBD). Upregulation of DRA, therefore, appears to be a novel approach to treat IBD associated diarrhea. In this regard, ATRA, a key metabolite of vitamin A is known to have anti-inflammatory and immunomodulatory properties. We earlier showed that ATRA, increased DRA function, expression and promoter activity through RAR-β via the involvement of transcription factor HNF-1β. Whether, ATRA could modulate DRA function and expression under inflammatory conditions is not known.
Aims: The aims were to evaluate the efficacy of ATRA in attenuating the inhibitory effects of IFN-γ on DRA utilizing Caco-2 cells as an *in vitro* model and Dextran sodium sulfate (DSS)-induced colitis as an *in vivo* mouse model.
Methods: Caco-2 cells grown on filter inserts were co-treated with IFN-γ (30 ng/mL) and ATRA for 24 hr or DSS colitis (3% DSS in drinking water for 7 days) mice were co-treated with ATRA (1 mg/kg body wt., i.p. for 7 days).
Results: Data demonstrated that ATRA abrogated IFN-γ induced decrease in DRA function as measured by DIDS-sensitive ^{125}I uptake. Parallel to this, IFN-γ-

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