Development of Experimentally Induced Intestinal Enteropathy in a Rat Model Using Gliadin to Mimic Celiac Disease
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Purpose
The purpose of the study is to develop a rat model that exhibits pathologic changes in jejunal mucosa similar to that of celiac pathology, by administration of gliadin (a protein present in wheat and several other cereals) to rat pups immediately after birth. Additionally, to validate the model for altered intestinal tissue function.

Methods
Two groups of Wistar rat pups were involved in this study. Group one were administered 1.5mg/g of 10% gliadin in 0.02M acetic acid solution and group two were administered equivalent volume of 0.02M acetic acid through intragastric gavage. Dosing was done every three days from day one until three endpoints, day 25,37 and 46. Average weight was monitored for both groups until each endpoint then compared by control. Intestinal specimens were collected from both groups for histological analysis.

Results
The average weight for gliadin fed group at three endpoints were significantly lower than the control group (p-value<0.05). figure(1) Histology screening through H & E staining revealed differences between the two groups. Gliadin administered rats showed marked villous atrophy compared to the control group. figure (2)

Conclusion
Intestinal enteropathy is the hallmark of celiac disease causing villous atrophy which results in altered absorption of nutrients and xenobiotics. Weight difference and abnormal intestinal histology indicate a response to gliadin mimicking the disease conditions. Intestinal permeability assessment and intestinal protein level expression studies will be used for further validation. Significance of such a model will help in performing pharmacokinetic studies. Oral drugs that are substrates or inhibitors to intestinal drug transporters and metabolic enzymes are candidates of interest.