Enhanced Salivary Epidermal Growth Factor is a Nonessential Aspect of Intestinal Adaptation in Female Mice

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Introduction:
Following massive resection of the small bowel the remnant intestine compensates by undergoing intestinal adaptation. Salivary derived epidermal growth factor (EGF) has been shown to play an important role during adaptation in male mice. Prior investigation has demonstrated an approximately two-fold increase in salivary EGF following small bowel resection (SBR) and sialoadenectomy results in impaired adaptation. Female mice have an approximately ten-fold reduction in salivary EGF compared to their male counterparts. We therefore proposed that enhanced salivary production of EGF would be an essential component in response to massive SBR.

Materials & Methods:
A 50% proximal SBR or sham operation (bowel transection and reanastomosis only) was performed on both male and female ICR mice. The ileum was harvested on postoperative day 3 and DNA, protein, villus height, crypt depth and proliferation index (BrdU incorporation) were determined. Additionally, saliva was collected and EGF content measured using an enzyme linked immunosorbent assay (ELISA). Comparisons were done using ANOVA and a $p<0.05$ considered significant. Values are presented as mean ± SEM.

Results:
As demonstrated by significantly increased protein, proliferation index (see graphs), DNA, villus height and crypt depth, both male and female mice adapted similarly. Male mice demonstrated a substantial increase in salivary EGF content during adaptation. Female mice however, had no measurable change in salivary EGF by ELISA (see graph).

Protein **Proliferation Index** **Salivary EGF**

NOTE: THIS SPACE HAD FIGURES OR GRAPHS WHICH GOT CORRUPTED DURING THE SCAN.

3500-, 0.8 - 350 - X 0 T _0 0.6 - Sham2500 i 250 - SBR0.4 p<0.05 15001 cu
150 Sham vs. SBR 0 500 1: 2 50- 12- F:1
MALE FEMALE MALE FEMALE MALE FEMALE
(N) (8) (7) (13) (10) (4) (4) (5) (4) (4) (4) (5) (4)

Conclusions:
Despite a decreased salivary EGF level, female mice were able to undergo intestinal adaptation similar to male mice following SBR. Additionally, female mice failed to show the increase in salivary EGF that is seen in male mice in response to massive SBR. These results

imply a non-essential role for increased salivary EGF levels during intestinal adaptation in female mice.