Effects of gastric bypass on the digestibility and postprandial metabolic fate of ^{15}N dietary protein in rats

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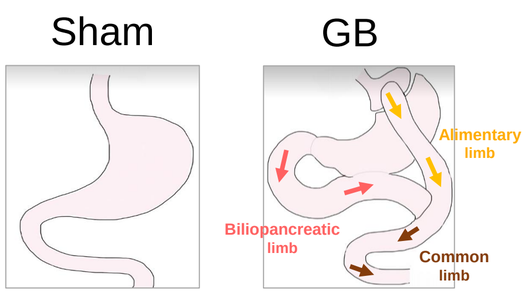
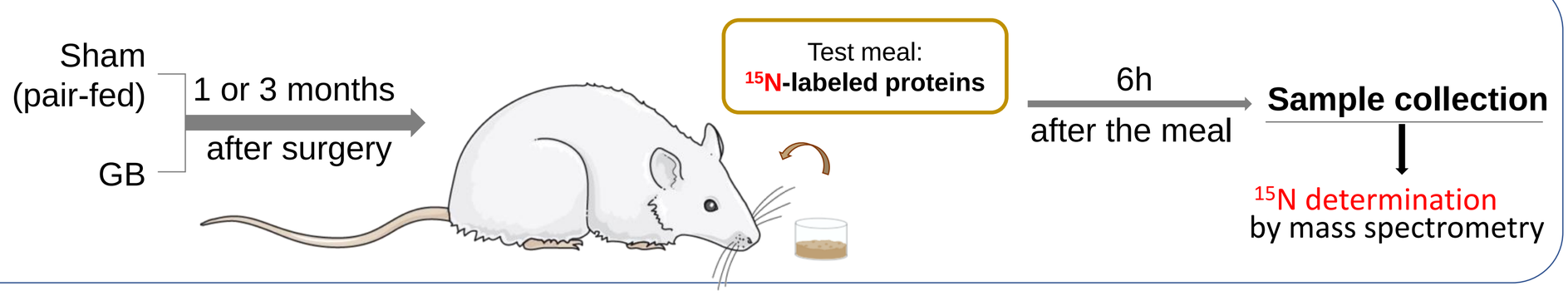
Context and objectives

- Gastric bypass (GB) decreases the stomach size and bypasses a part of the small intestine: qualified as a **restrictive malabsorptive procedure**.
- GB has been often associated with protein malnutrition, but **protein malabsorption was not always observed.**

  Hypothesis: ***GB → intestinal mucosa hypertrophy → Increasing dietary AA retention in the small intestine, at the expense of the other organs ➡ Protein malnutrition?***
- This study aimed to evaluate the **effects of gastric bypass on the intestinal mucosa and dietary protein bioavailability** at different time points after surgery.

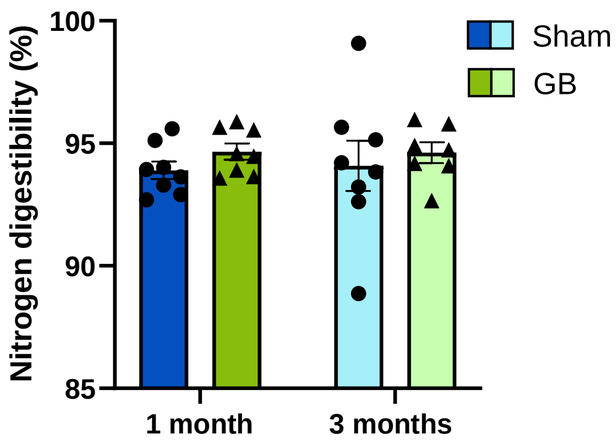
Methods





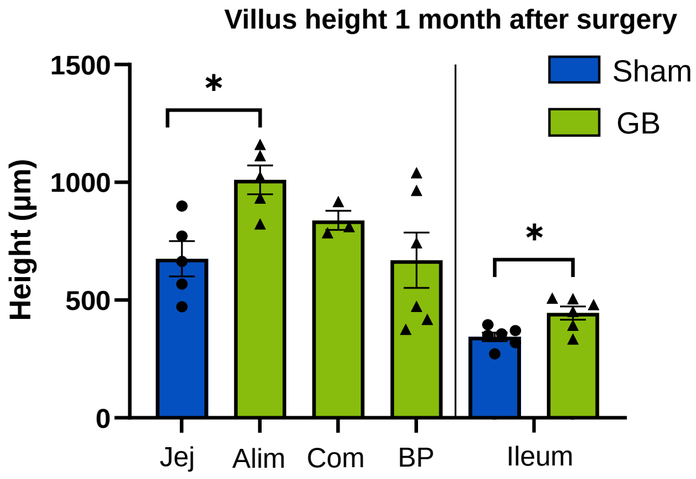
Results

Dietary protein digestibility



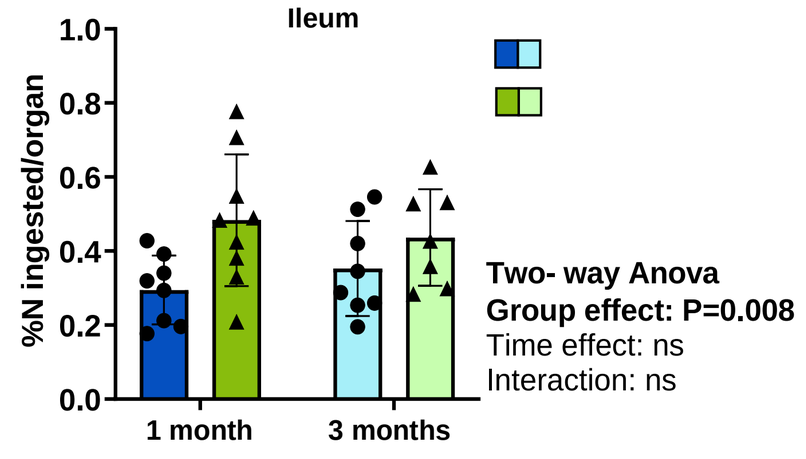
- Gastric bypass has no effect on dietary nitrogen digestibility.

Histology of the intestinal mucosa



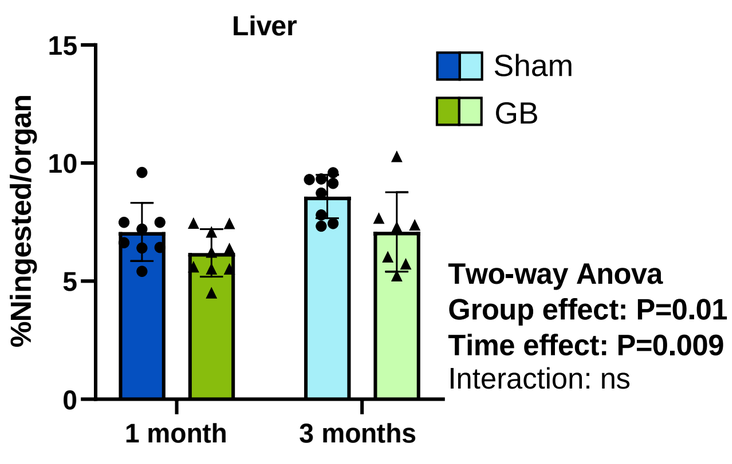
- Intestinal hypertrophy induced by gastric bypass.

Dietary nitrogen (^{15}N) recovered in gastrointestinal tract



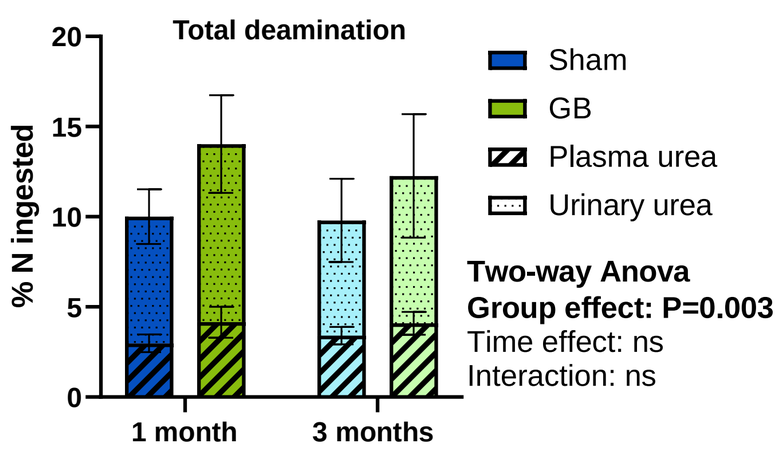
- Increase of dietary nitrogen sequestration only in the ileum after GB.

Dietary nitrogen (^{15}N) recovered in organs



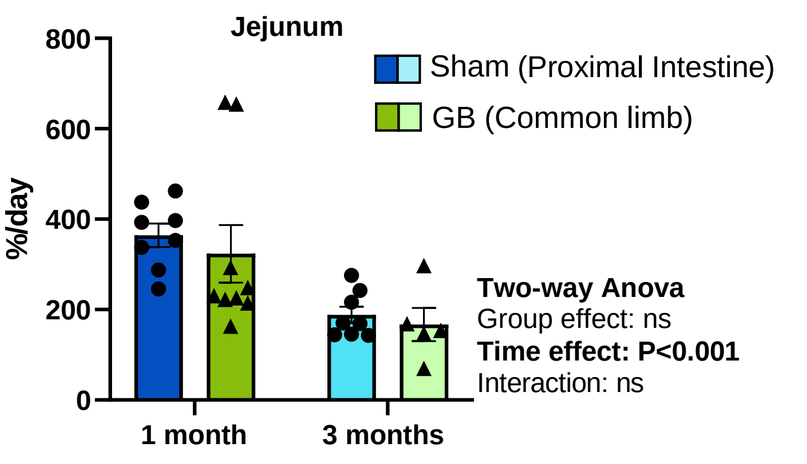
- Decrease of dietary N incorporation in liver (also in muscle, and skin).

Dietary nitrogen (^{15}N) transferred to urea



- Increase of dietary nitrogen in metabolic losses.

Fractional synthesis rate (FSR) in the small intestine



- Higher 3 months after surgery than after 1 month, but similar between groups.

Conclusion

Gastric Bypass :

- = Does not alter **protein digestibility**.
- ↗ Intestinal mucosa **hypertrophy.**
- ↗ **Increases** dietary nitrogen recovery **in the ileum** only.
- ↘ **Decreases** dietary nitrogen recovery **in other organs**.
- ↗ **Increases** dietary nitrogen **metabolic losses.**

➡ Those effects are **destined to disappear** over time.

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