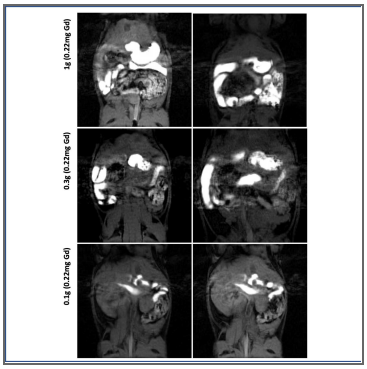

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We use this protocol and it's working

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MRI Imaging of the Gut

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ABSTRACT

This test is used measure peristaltic activity in the upper portion of the gut.

MATERIALS

- DietGel Recovery, Cat#72-06-5022 ClearH2O, ME, USA
- Gadolinium [Gd-DTPA powder] Cat#381667, Sigma Aldrich, St. Louis, USA
- 7T rodent MRI BioSpec 70/30; Bruker Instruments, Billerica, USA

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Protocol

1 Habituate mice to eat Diet gel (Cat#DietGel Recovery, ClearH2O, ME, USA) for at least a week.

Note

Habituation takes ~7 days of training until mice consume voluntarily approximately 1g of diet gel.

2 Fast mice for 12 to 18 hours.

3 Prepare 10g of Diet gel mixed with 22.4mg of Gadolinium [Gd-DTPA powder] (Cat#381667, Sigma Aldrich, St. Louis, USA).

Note

Boil the diet gel in warm water until its composition is completely liquid, let it cool down for 2-3 min and add the gadolinium powder, mix it well and mixed solution will return to it semi-solid gel state.

4 Give 0.3g of Diet Gel-Gadolinium mix to each mouse.

Note

0.3g of the Diet Gel-Gadolinium per mouse might vary depending on mouse weight. For a 30g mouse this amount will be enough to fill immediately the upper GI tract, however in our experience an amount of 1g is enough to get a visible contrast in the GI lumen.

Note

Following 12 to 18 hours of food restriction, mice should eat the gel within 2 to 5 min.

5 Using a 7T rodent MRI (BioSpec 70/30; Bruker Instruments, Billerica, USA), position the animal in prone and monitor respiratory activity patterns.

Note

Respiratory gating is highly recommended for image quality.

6 Localize the longitudinal axis of the stomach.

7 Perform series of alternating volumetric and fast scans.

Note

Volumetric scans are performed using a FLASH sequence, parameters should be troubleshooted for each investigator, however reference parameters for repetition time, echo time, angles, and thickness can be taken from Lu et al, 2018.

8 Sequences commonly take 2 min, repeat for as long as your experimental setting requires.