

SILICA: A VIABLE ALTERNATIVE FOR DIGESTIBILITY ASSESSMENT IN CANINE FEEDS?

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INTRODUCTION

Assessing canine feed digestibility is crucial. However, traditional methods, as total fecal collection (TC) can cause stress to the animals and require a lot of effort and resources. Indigestible markers provide a more efficient alternative. Our research explores naturally occurring silica as a promising internal marker for canine feeds.

OBJECTIVES

- Test the **potential** of naturally occurring silica as a **reliable internal marker** for canine feed digestibility.
- Compare **silica's accuracy, practical viability, and potential applications** against total fecal collection (TC).

MATERIALS AND METHODS

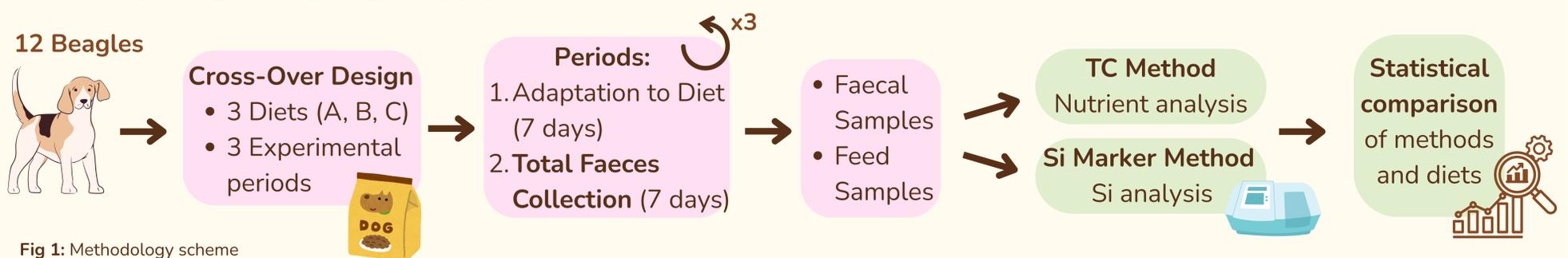


Fig 1: Methodology scheme

RESULTS

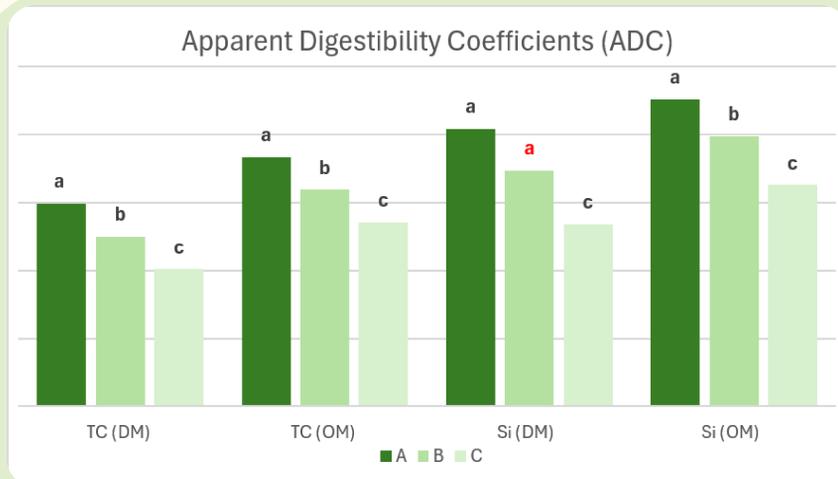


Fig 2: ADC for diets A, B and C determined by TC and Si methods

- The **Si method** yielded significantly **higher ADC** values than the TC method for all 3 diets (A, B, C), for both DM and OM.
- While the TC method discriminated between all three diets (A > B > C) for both DM and OM, the **Si method** did so for OM but **did not significantly differentiate between diets A and B for DM**.

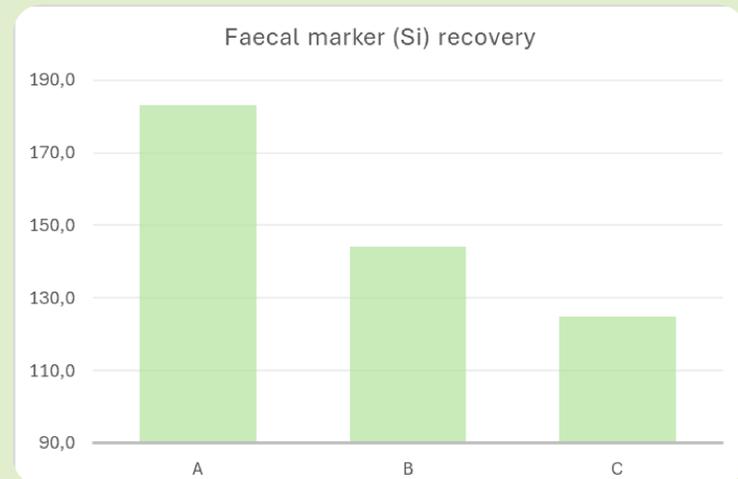


Fig 3: Mean faecal recovery (%) of the Si marker for diets A, B and C

- Mean faecal Si recovery **exceeded 100%** for all diets.
- A trend towards **normalization of recovery** (values closer to 100%) was observed as dietary **Si content increased** (0.30, 0.46, and 0.58 mg Si/kg for A, B, and C, respectively).
- The amount of “**extra Si**” during the 5 collection days **decreased as dietary Si levels increased**.

DISCUSSION

- The Si method overestimates digestibility, likely due to **uncontrolled external Si** (drinking water or sand). This causes higher variability and reduces reliability, especially with **low dietary Si**.
- **Increasing dietary Si** (Diet C) **improves marker recovery** and mitigates the external effect. Though not precise enough now, Si could be useful comparatively (OM) or by optimizing use

CONCLUSIONS

- Silica (Si), under the studied conditions, is **not as precise or reliable an alternative as total collection** for canine digestibility.
- Despite overestimating values and showing variability, **its potential could improve** by optimizing dietary Si and conditions of use.