

1 評估甘藷作為飲食中碳水化合物來源

2 對動物代謝的影響

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6 一、前言

7 二、不同澱粉來源餵養的大鼠餐後血糖反應的評估

8 三、貓咪飲食中五種碳水化合物來源對消化率、胰島素反應、代謝活動和腸道微生物
9 組的影響

10 四、乳牛飼糧以甘藷粉替代玉米粉對產乳量、攝食行為及代謝的影響

11 五、結論

12 摘要

13 碳水化合物是動物飲食中主要成分之一，不同澱粉組成的飲食會影響代謝表現，尤
14 其是餐後血糖和胰島素的反應，進而影響糖尿病和肥胖，因此本研究將評估不同植物作
15 為飲食中碳水化合物來源對動物的代謝影響，並討論作為飼料的可行性。首先利用玉米、
16 糙米、甘藷和豌豆四種不同植物來源的澱粉觀察對 Wistar 大鼠餐後血糖的影響，發現
17 甘藷及糙米組有較低的 glycemic index (GI) 值及總 AUC (area under the glucose curve)，
18 能有效控制血糖。進一步探討不同碳水化合物來源對腸道菌相的影響，將馬鈴薯、木薯、
19 甘藷、米、小麥分別添加到貓的飲食中，最終在貓糞便中檢測出甘藷組有 808 個
20 amplicon sequence variants (ASV)，同時有較高的 Shannon index，表示甘藷有增加腸道
21 菌群多樣性的潛力。再討論甘藷粉開發為飼料的可能性，取代原本飼糧中的玉米粉後，
22 發現不影響乳牛正常生長或產乳量。顯示甘藷具有開發為保健品或動物飼料的可能性，
23 為未來的動物營養管理提供了新穎且可行的選擇。

1 **Evaluate the effects of sweet potatoes**
2 **as a dietary carbohydrate source**
3 **on animal metabolism**

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6 **Outline**

- 7 1. Introduction
- 8 2. Evaluation of postprandial glycemic response in rats fed with different starch sources
- 9 3. Effects of five carbohydrate sources on cat diet digestibility, postprandial glucose,
10 insulin response, and gut microbiomes
- 11 4. Effects of substituting sweet potato flour for ground corn on performance, feeding
12 behavior, and metabolism of dairy cows
- 13 5. Conclusion

14 **Abstract**

15 Carbohydrates are a key component of animal diets and can affect metabolic performance,
16 including post-meal blood glucose and insulin responses, which can impact diabetes and
17 obesity. Therefore, this study aims to evaluate the effects of different plant sources as
18 carbohydrate components in animal diets on metabolism and discuss their feasibility as feed.
19 In the rat model, sweet potatoes were found to be more effective in controlling postprandial
20 blood glucose. In the cat model, sweet potatoes showed prebiotic potential, increasing gut
21 microbiota abundance. Additionally, sweet potatoes were proven to not affect normal growth
22 or physiological performance when added to animal feed, indicating their potential for
23 development as a health supplement or animal feed. This provides a novel and viable option
24 for future animal nutrition management.

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