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使用血中糖化血紅素作為評估糖尿病貓隻之指標

**Assessment of Glycosylated Hemoglobin A1c Concentrations as An Indicator of Diabetes Mellitus in Cats**

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臨床上，有許多檢測方法可以用來評估貓的糖尿病。然而事實上，由於一時緊迫導致的高血糖，使貓的檢出率較人或狗都更為明顯，因此導致這些檢測方法有時候並沒有辦法得到一個一致性的答案。因為緊迫導致的高血糖不僅會使糖尿病的診斷更為複雜，更大的問題在於影響血糖的監控，進一步影響糖尿病病貓胰島素劑量的調整。HbA1c 是一種醣化的血紅素，由血紅素中的 HbA1 透過其中的  $\beta$ -chain 這個子單位上的胺基

酸 ( valine ) N 端，與 glucose 進行縮合反應所形成的糖化變異體，臨床上俗稱為糖化血紅素。快速、短暫的高血糖，並不會改變紅血球中糖化血紅素的濃度，而糖化血紅素的濃度上升，代表的是幾個月內的平均血糖濃度皆較高所造成，因此糖化血紅素可以用來作為長期血糖監控的指標。本研究的主要目的在於建立非糖尿病貓隻的糖化血紅素正常範圍，以及確認糖化血紅素是否可以做為區別糖尿病貓隻與非糖尿病貓隻的指標。一共 53 隻家貓進入本研究。每隻貓於研究期間皆沒有服用任何藥物，並在研究開始時紀錄其基本資料。根據病史，與一個月中 3 次的理學檢查、血液學檢查及血糖檢測，最後確定為非糖尿病的貓隻，進入本研究並檢測其糖化血紅素的濃度作為正常範圍。另外收集國立中興大學獸醫學院附設獸醫教學醫院從 2013 年 12 月到 2014 年 5 月的糖尿，病貓隻病例，進入本研究並檢測其糖化血紅素的濃度作為糖尿病範圍。此外，由於先前的研究指出貧血可能是一個會影響糖化血紅素濃度的干擾因子，因此總血紅素濃度、血容比和糖化血紅素濃度之間的相關性，也會在本研究中一併進行探討。結果指出，本研究中非糖尿病貓隻的糖化血紅素濃度正常範圍 (  $2.58 \pm 0.233$  % ) 顯著低於糖尿病貓隻的糖化血紅素濃度範圍 (  $3.60 \pm 0.407$  % )，然而在非糖尿病貓隻中，不論是以性別、年齡、體重、體態分數、絕育情形等方式做分組比較，糖化血紅素的濃度皆沒有顯著差異。線性回歸分析的研究中指出，所有非糖尿病與糖尿病貓隻的血糖和糖化血紅素濃度之間具有高度正相關。非糖尿病貓隻的總血紅素濃度和糖化血紅素濃度之間則具有高度負相關；而血容比和糖化血紅素濃度之間也得到類似的結果。因此本研究的結論為，糖化血紅素可以做為區別糖尿病貓隻與非糖尿病貓隻的指標，但貧血確實是一個會影響糖化血紅素濃度的干擾因子。

## Parallel Abstract

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Various techniques have been used to evaluate the efficacy of treatment for diabetes mellitus (DM) in cats. Due to the fact that the stress-induced hyperglycemia is more pronounced in cats than in dogs or humans, these techniques may not always provide consistent results. Glycosylated hemoglobin A1c (HbA1c) is produced by the condensation of glucose with the N-terminal amino groups within the  $\beta$ -chains of hemoglobin A. HbA1c concentrations are not significantly altered by acute or transient hyperglycemia. An increase in glycol-hemoglobin concentration indicated a high glucose level during the preceding months thus can be used as an indicator of long-term glucose control. This study is to establish a normal range of HbA1c concentration in non-DM cats, and to evaluate whether HbA1c concentration can be used as an indicator to distinguish DM cats from non-DM cats. A total of 53 domestic cats were enrolled in this study. All the cats were recorded basic data, and none were receiving medication at the time of the study. According to the history and one month's physical, CBC and glucose examination, the cats were diagnosed if they have DM or not. Then, the normal range of HbA1c concentration in non-DM cats was constructed. The medical records of DM cats examined at Veterinary Medicine Teaching Hospital of National Chung Hsing University between December 2013 and May 2014 were also reviewed. Moreover, previous studies have shown that anemia may be a confounding factor on detecting HbA1c concentration. Therefore, the correction among HbA1c, hemoglobin and hematocrit in non-DM cats must be considered. The present study showed that the normal range of HbA1c

concentration in non-DM cats ( $2.58 \pm 0.233$  %) is significant lower than in DM cats ( $3.60 \pm 0.407$  %,  $p < 0.05$ ). It indicated that HbA1c concentration may be a useful indicator of diabetes mellitus in cats. In non-DM cats, no significant difference of HbA1c concentration was observed by gender, age, body weight, body conditions score or neutered status. The liner regression analysis showed that there is high correlation between the blood glucose and the HbA1c concentration, when non-DM cats and DM cats were all included. The liner regression analysis also showed that there is high negative correlation between hemoglobin and HbA1c concentration in non-DM cats. The relationship between hematocrit and HbA1c concentration showed similar results. Therefore, anemia may be a confounding factor on detecting HbA1c concentration.

## Reference ( 70 )

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1. Akol KG, Waddle JR, Wilding P. Glycated hemoglobin and fructosamine in diabetic and nondiabetic cats. *Journal of the American Animal Hospital Association* 28: 227-230, 1992.
2. Appleton DJ, Rand JS, Sunvold GD. Insulin sensitivity decreases with obesity, and lean cats with low insulin sensitivity are at greatest risk of glucose intolerance with weight gain. *Journal of Feline Medicine and Surgery* 3: 211-228, 2001.
3. Boitard C, Avner P. The immunology of diabetes mellitus. *Nature* 351: 519, 1991.
4. Brennan CL, Heonig M, Ferguson DC. GLUT 4 but not GLUT 1 expression decreases early in the development of feline obesity. *Domestic Animal*

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