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**Siswanto**

Laboratory of Veterinary  
Physiology, Faculty of  
Veterinary Medicine, Udayana  
University, Bali, Indonesia

**Sri Kayati Widyastuti**

Internal Laboratory, Faculty of  
Veterinary Medicine, Udayana  
University, Bali, Indonesia

## Blood sugar levels of Eid al-Adha sacrificial cows in Denpasar, Bali, Indonesia

**Siswanto and Sri Kayati Widyastuti**

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### Abstract

Sacrifice animals slaughtered in mosques must be in good health. Many sacrifice animals are brought from places far from the mosque as a place of slaughter. Generally, the animals are exhausted. Blood sugar levels can be used to predict the health status of animals, for example, tired/exhausted conditions. Animals with low blood sugar levels indicate that the animal is tired (exhausted), conversely normal blood sugar levels reflect adequate rest and feed consumption before being slaughtered. It is important to conduct research on blood sugar levels in sacrifice cattle before or animals are slaughtered to determine whether the sacrifice cattle are healthy. The purpose of this study was to determine the blood sugar levels of cattle that were slaughtered, so that the health status of the sacrifice animals could be known. This study used 10 blood samples from sacrifice cattle that were slaughtered in a mosque in Denpasar. Blood sugar level testing used the Accutrend Plus tool. The results showed that the sugar levels of kurban cattle that were slaughtered during Eid al-Adha were an average of 55 mg/dL, SD 9.4. This result is lower when compared to the sugar levels of normal Balinese cattle. This indicates that the sacrifice cattle before being slaughtered may not have received enough feed consumption or had less rest. The t-test with normal cattle showed a lower tendency although not significantly different ( $p \geq 0.05$ ).

**Keywords:** Denpasar, Bali, Indonesia, sugar levels, blood, cattle

### Introduction

Eid al-Adha, also known as the Festival of Sacrifice, is a significant religious event celebrated by Muslims worldwide, including in Bali, Indonesia. During this festival, sacrificial animals such as cows are offered in a ritual that symbolizes devotion and sharing. The health and welfare of these animals before slaughter is a crucial consideration, not only for ethical reasons but also to ensure the quality and safety of the meat. Blood sugar levels serve as an important physiological parameter, reflecting the animal's metabolic state, stress levels, and overall health.

This study aims to investigate the blood sugar levels of sacrificial cows in Denpasar, Bali, during Eid al-Adha. Understanding these levels can provide insights into the handling and welfare practices employed and identify areas for improvement to enhance animal welfare and meat quality.

In Indonesia, where Islam is the predominant religion, Eid al-Adha is marked by large-scale livestock sacrifice. Bali, a province with a significant Hindu population, also observes this festival in regions like Denpasar, where the Muslim community performs the ritual. The preparation of sacrificial animals involves transportation, feeding, and handling, all of which can influence their physiological state.

Blood sugar levels in livestock are influenced by multiple factors, including diet, stress, and health conditions. Stressful situations, such as transportation and handling before slaughter, can lead to increased cortisol secretion, triggering gluconeogenesis and hyperglycemia. Elevated blood sugar levels not only indicate stress but may also affect meat quality, particularly its texture, taste, and shelf life.

Given the cultural and religious significance of sacrificial practices, there is a growing emphasis on improving animal welfare.

**Corresponding Author:**

**Siswanto**

Laboratory of Veterinary  
Physiology, Faculty of  
Veterinary Medicine, Udayana  
University, Bali, Indonesia

Studying the physiological parameters of sacrificial animals, including blood sugar levels, can contribute to better management practices and support the alignment of religious rituals with modern standards of animal ethics and health.

Several studies on sugar levels in cattle have been conducted. Sugar levels in cattle were found to be 57.40 mg/dL, SD. 7.9 [1]; 67-75 mg/dL [2]; 43 mg/dL [3] and 65.2 mg/dL, SD. 11.1 [4].

## Research Methods

### Research design

A cross-sectional study design used in this research and the purposive method was used in sampling.

### Sample

Twenty male cows as sacrificial animals in the mosque were used as research objects. Approximately 3 ml of blood was taken from 20 male Balinese cattle to be slaughtered. The blood is collected into a test tube with EDTA, then placed in a cold box. This is then continued with laboratory tests.

### Data analysis

The data obtained from the test using the Accutrend Plus tool were recorded and then tabulated. The range and standard deviation were determined. Data were analyzed using excel to determine the range and standard deviation. The t-test was used to determine the difference with other data.

## Results and Discussion

### Results

The results showed that the sugar levels of sacrificial cattle slaughtered during the Eid al-Adha were an average of 54.8 mg/dL, SD 7.64. The t-test with normal cattle (sufficient feed and rest) showed a lower tendency although not significantly different ( $p \geq 0.05$ ). The complete results are presented in Table 1 below.

**Table 1:** The sugar levels of sacrificial cattle in Denpasar

Animal	Level of Glucosa (Mg/Dl)
1	50
2	60
3	55
4	55
5	50
6	54
7	68
8	45
9	65
10	46
11	55
12	65
13	54
14	50
15	70
16	45
17	40
18	65
19	68
20	40
Average	55
Standard Deviation	9.4

### Discussion

The results of research on the blood sugar level profile in cattle show mixed results. The average blood glucose level of Bali cattle before feeding was 43.11±2.98 mg/dL and 2 hours after feeding was 66.44±2.87 mg/dL [5]. The results showed

that the blood glucose levels of male Bali cattle after transportation at Pesanggaran Slaughterhouse Denpasar was 50,67 mg/dL±13,25 [6] Meanwhile, the results of research obtained the average blood glucose level of female Bali cattle in the three weeks prepartum of 65.41±5.61 mg/dL, on the day of parturition of 46.50±3.22 mg/dL and three weeks postpartum of 55.07±5.81 mg/dL [7] On the other hand, the glucose levels found 87.4±7.9 to 93.7±14.9 (mg/dL) [8] and 86.2 mg/dL [9] and 59.07 mg/dL [10].

The variety of research results on blood sugar levels can be caused by, among other things, different environmental and animal conditions, and no less importantly, the tools used are also different. However, the results of our study on sugar levels in Balinese cattle slaughtered in mosques as sacrificial animals using the Accutrend Plus tool made by Roche Germany obtained an average of 55 mg/dL, SD 9.4. These results tend to be lower when compared to Balinese cattle in normal conditions. This shows that sacrificial cattle before being slaughtered may not have received enough feed consumption or rest.

Cows that do not get enough nutritional intake cause cows to become weak due to the lack of available energy. Lack of food intake causes the body to undergo glycogenolysis metabolism, which is the breakdown of body fat and protein to provide energy [11-14]. This condition causes blood sugar levels to decrease.

## Conclusions and Suggestions

### Conclusions

It was concluded that low blood sugar levels (hypoglycogenemia) were possible due to lack of food (malnutrition) and fatigue before slaughter.

### Suggestions

It is recommended that cows used as sacrificial animals are given sufficient food, drink and rest before being slaughtered

### Conflict of Interest

Not available

### Financial Support

Not available

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