Blood Cholesterol and Glucose of KUB Chicken That Feed Containing Chinese Cabbage (*Brassica pekinensia* L.)

Lusfia, Muhammad Amrullah Pagala, Hamdan Has, and Deki Zulkarnain

Faculty of Animal Science, Halu Oleo University, Kendari, Southeast Sulawesi
e-mail: hamdan_has@uho.ac.id

**Abstract**

This study aimed to analyze the levels of Blood cholesterol, and glucose of KUB chicken that feed containing Chinese cabbage (*Brassica pekinensia* L.). The design used in this study was a completely randomized design (CRD) consisting of 4 treatments and 5 replications. The treatments used were: P1 = control, P2 = ration + 3% chicory flour, P3 = ration + 6% chicory flour, P4 = ration + 9% chicory flour. The parameters observed in this study were cholesterol and glucose levels. Based on the results of the study, the addition of chicory flour had no significant effect (P>0.05) on blood glucose in KUB chickens and a significant effect (P<0.05) on blood cholesterol levels in KUB chickens.

**Keywords**: Cholesterol, Glucose Levels, KUB Chicken, Chilli Flour.

**Introduction**

KUB chicken (Kampung Unggul Balitnak) is the result of selection from the village chicken family for 6 generations (Sales et al., 2021). The selection criteria used were increasing egg production by reducing broodiness (Wati et al., 2021; Surahman et al., 2022). However, there is a common problem that occurs in the poultry industry, especially in meat production today, namely the high use of protein source feed ingredients which causes feed prices to become increasingly expensive. (Souleh et al., 2022; Abdullah et al., 2021).

At present, attention is paid to chicory (*Brassica pekinensia* L.) which is used as an alternative feed ingredient for protein sources. (Mangelep et al., 2016). The potential of chicory as an alternative feed ingredient for KUB chickens is quite high seen from the content of food substances, especially protein, which is 26%. (Utomo, 2018; Mushollaeni & Fitasari, 2021). High water content in chicory (93.82%) causes chicory physically to rot easily (Wawandi et al., 2021). Many chemical treatments are carried out to ensure the availability of chicory as an alternative feed, but direct or dried feeding is one of the effective ways. (Hasan et al., 2014).

Chickpeas also contain antioxidants, such as spinasterol, hentriakontan, flavonoids, tannins, potassium nitrate, calcium oxalate, phosphate salts, iron, and vitamins (A, C, E) (Syarif & Flaning, 2013), antioxidants such as vitamins (A, B, C, B) (Banjarnahor, 2019), Flavonoids and tannins can help reduce bad cholesterol levels in the body without reducing the amount of good cholesterol (Apriliani et al., 2021). The high content of potassium and fiber is also able to lower blood cholesterol levels.

This study aimed to analyze the blood cholesterol and glucose levels of KUB chickens fed a diet containing chicory flour (*Brassica pekinensia* L.). The results of the study are expected to be reference material for the community in raising KUB chickens. In addition, the results of this study are expected to be used as a reference for further research.

**Materials and methods**

This research was conducted in Baruga District, Kendari City. The tools used in this study were 20 units of square cages with a size of 80 cm x 80 cm for each unit. The tools used in the study were a feeder, drinking container, scales, rice husks, a 60-watt incandescent lamp as a source of heat and lighting, a syringe, and NESCO Multi-check to determine cholesterol and glucose levels in KUB chickens. The materials to be used in this study were 100 KUB chicken DOC (Day Old Chilk), broiler concentrate, milled corn, rice bran, and white mustard flour (*Brassica pekinensia* L.).

Chickpeas are chopped with a size of 3-5 cm using a knife and then dried in the sun for 5-7 days. The white mustard is then ground using a
grinding machine until it becomes white mustard flour. KUB chickens were reared from DOC until the age of 8 weeks. Feeding during brooding using concentrate feed is at the age of 1-11 days. Days 12-14 KUB chickens run a period of adaptation to feed. The treated white mustard flour feed was given after the chickens were 15 days old until the age of 8 weeks. The composition of feed ingredients based on the treatment used in the study is presented Table 1.

Table 1. Feed Composition Based on Treatment

<table>
<thead>
<tr>
<th>Feed Ingredients</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P1 (%)</td>
</tr>
<tr>
<td>Concentrate</td>
<td>33</td>
</tr>
<tr>
<td>Corn</td>
<td>49</td>
</tr>
<tr>
<td>Bran</td>
<td>18</td>
</tr>
<tr>
<td>White mustard flour</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Research variable

The variables observed in this study were cholesterol and blood glucose levels of KUB chickens.

Research design

The design used in this study was a completely randomized design (CRD) which consisted of 4 treatments and 5 replications so that there were 20 experimental units. Each experimental unit was filled with 5 chickens. The treatments applied are as follows:
- P1 = Control
- P2 = Ration contains 3% white mustard flour
- P3 = Ration contains 6% white mustard flour
- P4 = Ration contains 9% white mustard flour

Data analysis

The data were analyzed for variance using ANOVA and the treatment had a significant effect (P<0.05) on the evaluated variables followed by Duncan's test, data analysis was carried out with the help of the IBM SPSS Statistics 24 program.

Results and Discussion

The results of the observation of blood cholesterol, glucose, and uric acid levels of KUB chickens fed with additional white mustard flour can be seen in Table 2.

Table 2. Average blood cholesterol, glucose, and uric acid levels of KUB chickens fed with added white mustard flour (Brassica pekinensis L.).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P0</td>
</tr>
<tr>
<td>Blood cholesterol</td>
<td>162.20±5.63 a</td>
</tr>
<tr>
<td>Blood glucose</td>
<td>320.8 ±29.12</td>
</tr>
</tbody>
</table>

Description: Different superscripts on the same line show significantly different treatments (P<0.05)

Blood Cholesterol Level

The results of the analysis of variance showed that feeding with chicory flour (Brassica pekinensis L.) had a significant effect (P<0.05) on the blood cholesterol levels of KUB chickens. The use of chicory flour (Brassica pekinensis L.) in feed at a level of 9% was able to reduce blood cholesterol levels in KUB chickens. Duncan's test results showed that P0 was not significantly different from P1 and P2 but significantly different from P3. The lowest mean blood cholesterol level was found in P3 which was 132.40 mg/dl which was lower than the average value of P0, P1, and P2, and the highest average value was found in P0 treatment, which was 162.20 mg/dl.

The provision of chicory flour (Brassica pekinensis L.) had a significant effect on reducing cholesterol levels in KUB chicken, this was thought to be due to the presence of tannins and flavonoids in chicory. Flavonoids and tannins can help reduce bad cholesterol levels in the body without reducing the amount of good cholesterol (Yuliana et al., 2021). In addition, the high content of potassium and fiber is also able to lower blood cholesterol levels (Marni et al., 2021).

Antioxidant compounds such as flavonoids
found in chicory flour (Brassica pekinensia L.) can reduce cholesterol levels in KUB chickens by inhibiting 3-hydroxy-3-methyl-glutaryl-coenzymes (HMG-CoA) reductase. With a decrease in cholesterol levels, LDL which functions as a means of lifting lipids in the blood will decrease in levels (Hasniiar et al., 2021).

**Blood Glucose**

The results of the analysis of variance showed that feeding with chicory flour (Brassica pekinensia L.) had no significant effect (P>0.05) on the blood glucose levels of KUB chickens. The lowest mean value of blood glucose levels in KUB chickens was found in P3 which was 286.00 mg/dl and the highest average value was found in P1 which was 320.8 mg/dl.

The content of active compounds contained in chicory flour (Brassica pekinensia L.) such as flavonoid compounds has an inhibitory effect on the alpha-glucosidase enzyme through hydroxylation and substitution bonds in ring B. The principle of this inhibition is similar to that of acarbose which results in a delay in the hydrolysis of carbohydrates and disaccharides and absorption. glucose and inhibit the metabolism of sucrose into glucose and fructose.

Flavonoid compounds found in chicory flour (Brassica pekinensia L.) also have other compounds that can lower glucose levels such as saponin compounds that can inhibit glucose transport from the stomach to the small intestine and will further inhibit the increase in blood glucose in KUB chickens. Saponins can inhibit glucose transport from the stomach to the small intestine and the brush border of the intestine, and further inhibit the increase in blood glucose levels (Karlino et al., 2020).

**Conclusion**

Based on the results of the study, it can be concluded that the administration of chicory flour (Brassica pekinensia L.) in KUB chickens had a significant effect (P<0.05) on blood cholesterol levels, administration of 9% chicory flour could reduce blood cholesterol levels in KUB chickens.

**References**


