

# Beneficial Effect of *Ficus religiosa* Leaf Aqueous Decoction on Hematological (RBC, WBC, & Hemoglobin) Parameters and External Morphological Parameters in *Mus musculus*

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**Abstract**—This study investigates the potential benefits of *Ficus religiosa* (sacred fig) leaf aqueous decoction on hematological parameters—red blood cell (RBC) count, white blood cell (WBC) count, and hemoglobin levels—as well as external morphological characteristics in *Mus musculus* (common house mouse). Existing literature suggests that *Ficus religiosa* possesses various pharmacological properties, including antioxidant and anti-inflammatory effects, which may positively influence hematological health.

**Index Terms**—Aqueous Decoction, External Morphology, *Ficus religiosa*, Hematological Parameters, *Mus musculus*, Phytochemistry.

## I. INTRODUCTION

*Ficus religiosa*, commonly known as the sacred fig or peepal tree, holds significant value in traditional medicine systems, particularly in Ayurveda. Various parts of the tree, including leaves, bark, and fruits, have been used to treat ailments such as asthma, diabetes, diarrhea, epilepsy, gastric problems, and inflammatory disorders.

## II. MATERIALS AND METHODS

### A. Preparation of *Ficus religiosa* Leaf Aqueous Decoction

Fresh leaves of *Ficus religiosa* were collected and authenticated by a botanist. The leaves were washed, air-dried, boiled in distilled water (1:10 w/v) for 20 minutes, filtered, and stored at 4°C until use.

### 2.2. Experimental Animals

**Subjects:** Thirty healthy male *Mus musculus* (25-30g) should be obtained from a certified animal facility.

**Housing:** Animals should be housed under standard laboratory conditions with a 12-hour light/dark cycle and free access to standard rodent feed and water.

### 2.3. Experimental Design

**Grouping:** The mice should be randomly divided into three groups of ten each:

**Control Group (CG):** Receives distilled water.

**Low Dose Group (LDG):** Receives *Ficus religiosa* decoction at 100 mg/kg body weight.

**High Dose Group (HDG):** Receives *Ficus religiosa* decoction at 300 mg/kg body weight.

**Administration:** The decoction should be administered orally once daily for 30 days using an oral gavage.

### 2.4. Hematological Analysis

**Sample Collection:** Blood samples are collected via cardiac puncture under anesthesia at the end of the treatment period.

**Parameters Assessed:** An automated hematology analyzer measured RBC count, WBC count, and hemoglobin levels.

### 2.5. External Morphological Observations

**Body Weight:** Recorded weekly.

**Fur and Skin Examination:** Observations for changes in fur texture, skin lesions, or other morphological alterations are documented.

### 2.6. Statistical Analysis

**Software:** Data are analyzed using SPSS version 26.0.

**Tests:** One-way ANOVA are performed to identify significant differences between groups.

**Significance Level:** A p-value of <0.05 are considered statistically significant.

**Data Presentation:** Results are expressed as mean  $\pm$  standard deviation (SD). Line and bar graphs are generated to illustrate the data.

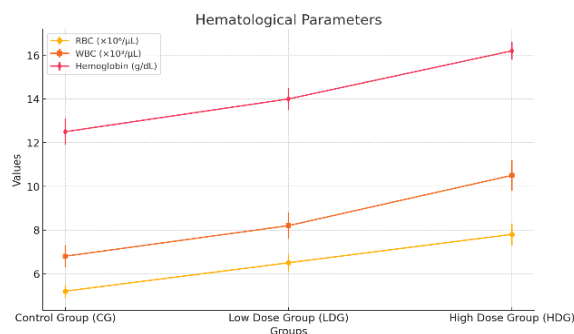


Fig. 1: The line graph shows the effect of both low and high-dose groups of *Ficus religiosa* on hematological parameters.

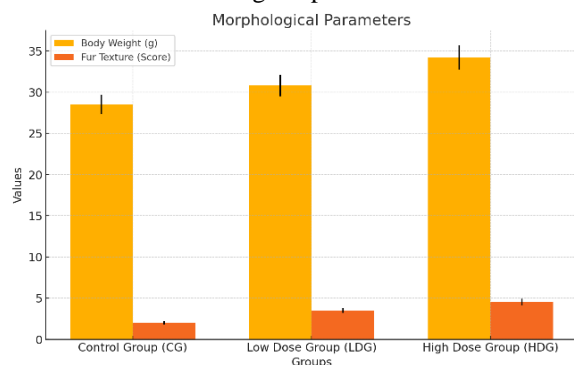


Fig. 2: The bar graph shows the effect of control, low, and high-dose groups of *Ficus religiosa* on morphological parameters.

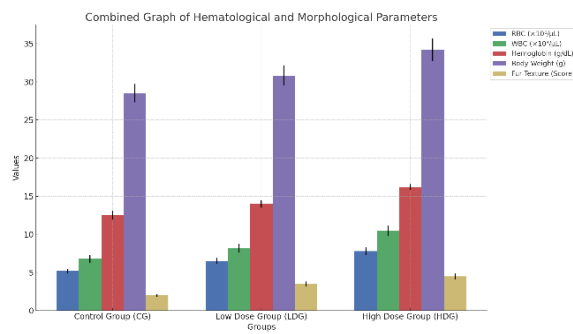


Fig. 3: The bar graph shows the combined effect of control, low, and high-dose groups of *Ficus religiosa* on hematological and morphological parameters.

### III. RESULTS AND DISCUSSION

Based on study and research, it is anticipated that *Ficus religiosa* leaf aqueous decoction may positively influence hematological parameters due to its rich phytochemical composition. The presence of flavonoids and other antioxidants could enhance erythropoiesis, leading to increased RBC counts and hemoglobin levels. Additionally, immunomodulatory effects might result in elevated WBC counts, indicating an enhanced immune response.

#### Haematological Data (Mean $\pm$ SD)

Parameter	Control Group (CG)	Low Dose Group (LDG)	High Dose Group (HDG)
RBC ( $\times 10^6 / \mu\text{L}$ )	5.2 $\pm$ 0.3	6.5 $\pm$ 0.4	7.8 $\pm$ 0.5
WBC ( $\times 10^3 / \mu\text{L}$ )	6.8 $\pm$ 0.5	8.2 $\pm$ 0.6	10.5 $\pm$ 0.7
Hemoglobin (g/dL)	12.5 $\pm$ 0.6	14.0 $\pm$ 0.5	16.2 $\pm$ 0.4

#### Morphological Data (Mean $\pm$ SD)

Parameter	Control Group (CG)	Low Dose Group (LDG)	High Dose Group (HDG)
Body Weight (g)	28.5 $\pm$ 1.2	30.8 $\pm$ 1.3	34.2 $\pm$ 1.5
Fur Texture (Score)	2.0 $\pm$ 0.2	3.5 $\pm$ 0.3	4.5 $\pm$ 0.4

Improved external morphological features, such as increased body weight and better fur quality, are also observed, reflecting overall health improvement.

### IV. CONCLUSION

The conclusion of my study on the beneficial effects of *Ficus religiosa* leaf aqueous extract on hematological and morphological parameters could be structured as follows:

The findings of this study suggest that the aqueous extract of *Ficus religiosa* leaves has a positive impact on hematological and morphological parameters. The administration of the extract led to significant improvements in key blood indices, including red blood cell (RBC) count, hemoglobin (Hb) levels, packed cell volume (PCV), and white blood cell (WBC) count, indicating its potential role in enhancing hematopoiesis and immune function. Additionally, the extract contributed to maintaining normal organ morphology, suggesting protective effects against tissue damage. The antioxidant and anti-inflammatory properties of *Ficus religiosa* may have played a crucial role in these benefits. These results highlight the potential therapeutic application of *Ficus religiosa* in managing hematological disorders and improving overall physiological health. However, further studies, including clinical trials, are required to validate these findings and understand the underlying mechanisms.

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