

**PENGARUH IRAMA SIRKADIAN DAN RANGSANGAN MEKANIS
TERHADAP HITUNG JENIS LEUKOSIT PADA MARMUT**

***THE EFFECT OF CIRCADIAN RHYTHM AND MECHANICAL STIMULUS
TO DIFFERENTIAL LEUKOCYTE COUNTS ON MARMOTS***

ABSTRACT

Background: *Light is one of the external stimulus playing a great role in mammal's circadian rhythm. The light-dark cycle in environment could affect the secretion of melatonin from the pineal gland. Moreover, change of melatonin secretion could affect body's acute response, such as leukocyte commonly linked to immune system.*

*Due to changing lifestyle and increasing work pressure, many individuals experience lack of sleep or sleeping disorder which results in inadequate exposure of light. As many immune components have been shown to have circadian patterns affected by light, it is highly likely that the effect to the immune system is detrimental. As a result, the ability of immune system on fighting mechanical stimulus, which often cause inflammation on gingiva, could be affected. **Purpose:** The aim of this study is to find the effect of circadian rhythm and mechanical stimulus to differential leukocyte counts on marmots. **Methods:** 24 marmots (*Cavia cobaya*) were classified into three groups: control group (12 Hours Light:12 Hours Dark/12HL:12HD), constant light/24 Hours Light (24HL) group and constant dark/24 Hours Dark (24HD) group. After 15 days, blood were collected from each group and differential leukocyte counts were measured. Later on, tooth separator were inserted in the marmots' upper teeth for 7 days. Finally, blood were collected and differential leukocyte counts were measured. **Results:** There is a significant difference between each group, before and after the placement of separator computed using repeat measure test ($p < 0.05$). **Conclusion:** Circadian rhythm and mechanical stimulus effects differential leukocyte counts on marmots. **Keywords:** Melatonin, differential counts, leukocyte, tooth separator.*