



## PERTURBATION OF RBC COUNT DUE TO EFFECT OF MAGNETIC FIELD

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### ABSTRACT:

The **RBC** is a count of the number of red blood cells per cubic millimeter of blood. The hormone erythropoietin, secreted by the kidneys, stimulates the bone marrow to produce red blood cells. The formation of red blood cells is known as erythropoiesis. Change in RBC counts can cause **Polycythemia Vera** (an abnormal increase in red blood cells), **Anemia** (decrease in red blood cells). In this paper we give how much RBC count perturbed due to the effect of magnetic field.

**KEYWORD:** Blood, Magnetic Field, RBC count.

### INTRODUCTION:

In the last few decades, various studies pertaining to biological effect of electromagnetic field exposure have been performed. Most of studies carried out on animals like mice, rat and human showed that electromagnetic fields perturbed haematological parameters in these organisms [1,2,3,4]. Technology is the bone marrow of modern society. We are exposed to the electromagnetic fields as a result of progresses in technology and science. Every electronic-device used in day to day life produce electromagnetic fields. Blood is an important body fluid for life. In blood, RBC is the important blood cell also known as erythrocytes. RBCs are also known as erythrocytes and they are bright red in colour, RBCs, accounts for about 40 to 45 percent of blood volume. RBCs has biconcave disk with a flattened center like shape or both faces of the disc have shallow bowl-like indentations. A red blood cell looks like a donut.

Production of red blood cells is controlled by erythropoietin, a hormone produced primarily by the kidneys. Red blood cells start as immature cells in the bone marrow and after approximately seven days of maturation are released into the bloodstream. Unlike many other cells, red blood cells have no nucleus and can easily change shape, helping them fit through the various blood vessels in your body. However, while the lack of a nucleus makes a red blood cell more flexible, it also limits the life of the cell as it travels through the smallest blood vessels, damaging the cell's membranes and depleting its energy supplies. The life span of red blood is only 120 days.

Red cells contains haemoglobin, which helps carry oxygen from the lungs to the rest of the body and then returns carbon dioxide from the body to the lungs so it can be exhaled. Blood appears red in colour because of the large number of red blood cells, which get their colour from the haemoglobin. The percentage of whole blood volume that is made up of red blood cells is called the haematocrit and is a common measure of red blood cell levels. Red blood cells (erythrocytes) transport oxygen to body tissues. If your body's tissues don't get enough oxygen, your body won't be able to stay healthy. Low red blood cell count is called anemia. This condition may cause extreme tiredness, weakness and shortness of breath. Sometimes this causes a person to feel faint or dizzy, have a dry cough and have a rapid heart rate.

### **METHODOLOGY:**

This is an in-vitro study, in which we collect some samples of blood and exposed to different values of magnetic field. After the exposure these blood samples are tested pathologically.

**RESULT:** The given below table shows variations of RBC count with respect to value of Magnetic field.

<b>MAGNETIC FIELD</b>	<b>RBC COUNT</b>	<b>NORMAL VALUE</b>
0 GAUSS	4.36 millon/mm <sup>3</sup>	3.5- 5.5 millon/mm <sup>3</sup>
27.30 GAUSS	4.20 millon/mm <sup>3</sup>	3.5- 5.5 millon/mm <sup>3</sup>
49.15 GAUSS	4.18 millon/mm <sup>3</sup>	3.5- 5.5 millon/mm <sup>3</sup>
65.63 GAUSS	4.10 millon/mm <sup>3</sup>	3.5- 5.5 millon/mm <sup>3</sup>

When we apply 0 gauss magnetic field on blood sample, the value of RBC count is 4.36 millon/mm<sup>3</sup>. At 27.30 gauss magnetic field RBC count decreases to 4.20 millon/mm<sup>3</sup>. At 49.15 gauss magnetic field, red blood cell count decreases to 4.18 millon/mm<sup>3</sup>. When we increases the value of magnetic field up to 65.63 gauss, RBC count decreases to 4.10 millon/mm<sup>3</sup>.

### **CONCLUSION:**

The result shows that RBC counts are decreases as we increase the value magnetic field. Thus exposure to magnetic field is harmful for human being because when RBC decreases many diseases related to RBC like anemia, iron deficiency anemia, sickle cell diseases & genetic diseases may occur.

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