

## **A Study on the Effects of Carbon Monoxide Poisoning in Blood by Using Optical Microscope**

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### **Abstract**

Carbon monoxide (CO) is an odorless, tasteless, colorless, non-irritant poisonous gas and can be found anywhere. These characteristics are the main factor for carbon monoxide to be called as a 'silent killer'. Inhalation of carbon monoxide will cause the carbon monoxide enters the bloodstream attaches to hemoglobin forming *carboxyhemoglobin* (HbCO). This study will focus on the changes of the blood cell which are a red blood cell, white blood cell, and platelets. The study was conducted on *Sprague-Dawley* rats. The rat was exposed to the carbon monoxide in an enclosed box which was to avoid any outer gas entering the box and carbon monoxide gas escaped from the box. The automobile exhaust was connected to a box with 28x16x26cm with a hose or pipe. The exposing of the carbon monoxide to the chamber varies in time from 30 to 300 seconds. The rat started to get the effect of inhalation of the carbon monoxide after 30 seconds of exposure and started to die after one to two minutes. The blood of the rats is collected by the retro-orbital puncture technique. The blood was smeared and stain with Wright and Giemsa staining for microscopic examination. Microscopic examination shows that most of the red blood cells become poikilocytosis. The white blood cells are hard to be found in the blood smear. Hypersegmentation of the white blood cell can be seen. The red blood cell becomes abnormal because of the binding with carbon monoxide. As conclusion, concentration of the carbon monoxide increased with the increasing time, red blood cells morphology changes when exposed to the carbon monoxide and white blood cells was altered due to carbon monoxide poisoning.

**Keywords:** Carbon monoxide, *Sprague-Dawley*, *Carboxyhemoglobin*, poikilocytosis, white blood cell, and retro orbital puncture