

## 407 52437 30 : MAJOR PHARMACOLOGY

KEY WORD : METHEMOGLOBINEMIA, CYTOCHROME B<sub>5</sub> REDUCTASE, NITROGLYCERIN.

WANIDA RUJIRASEREECHAI : CYTOCHROME B-5 REDUCTASE ACTIVITY AND  
METHEMOGLOBINEMIA IN RED BLOOD CELLS OF PATIENTS RECEIVING NITROGLYCERIN.

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Methemoglobin is a derivative of hemoglobin in which the iron portion of heme complex has been oxidized to the ferric state which cannot carry oxygen. In normal individuals, methemoglobin in the red blood cell is maintained at a very low level (<1%). It is immediately reduced by cytochrome b<sub>5</sub> reductase to the ferrous hemoglobin moiety. Since acquired methemoglobinemia may be resulted from exposure to a variety of oxidizing agents and related to cytochrome b<sub>5</sub> reductase deficiency. Nitroglycerin is a principle therapeutic agents for relief of angina pectoris. Methemoglobinemia caused by denitration of nitroglycerin has been reported as a potential serious complication of intravenous nitroglycerin administration especially in association with other oxidizing agent. The present study was aimed to investigate the cytochrome b<sub>5</sub> reductase activity and methemoglobinemia in human red blood cells of healthy volunteers and in patients receiving nitroglycerin. 114 normal blood samples from male and female healthy volunteers with 20 – 65 years old were used as control group and 40 blood samples of patient receiving 24,000 – 104,000 µg intravenous nitroglycerin were treatment group. In healthy volunteers : The concentration of methemoglobin in 57 men and 57 women healthy volunteers was  $0.05 \pm 0.02$  and  $0.08 \pm 0.02$  % of total hemoglobin (mean  $\pm$  SE), respectively. The cytochrome b<sub>5</sub> reductase activity in male were statistic significantly lower ( $p < 0.05$ ) than female. The methemoglobin concentration and cytochrome b<sub>5</sub> activity in treatment group were statitic significantly higher than normal volunteers . The cytochrome b<sub>5</sub> reductase activity did correlate with concentration of methemoglobin in sample group. It showed this study concluded in that patients who were received 24,000–104,000 µg intravenous nitroglycerin had higher methemoglobin level, but their methemoglobin level were within an acceptable level of normal conditions.

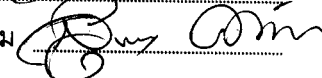
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