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Effect of Acetaminophen on Glucose-6-Phosphate Dehydrogenase, Mahidol Variant

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To the Editor,

Although acetaminophen (paracetamol) is considered a safe drug for the Mediterranean type of glucose-6-phosphate dehydrogenase (G6PD) deficiency [1], a case of moderately severe hemolytic anemia resulting from ingestion of this drug has been recently reported [2].

To confirm the acetaminophen idiosyncrasy in a G6PD-deficient subject we wish to report the effect

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of this drug in G6PD deficiency, Mahidol variant. This is the most common variant in Thai population [3], albeit usually asymptomatic, sometimes presenting an adverse effect after the consumption of certain drugs or chemicals [4]. The experiment was performed in vivo with the subject's consent, labelling G6PD-deficient Mahidol variant erythrocytes with ^{51}Cr using standard method C (ACD/ascorbic acid method) recommended by ICSH [5]. 10 ml of labelled erythrocytes were then transfused into a ABO-compatible normal subject. After taking blood samples for 6 consecutive days, a dose of 2 tablets (1,000 mg) of paracetamol was administered orally 3 times a day for a period of 2 weeks during which the blood samples were taken 2-3 times a week for radioactive measurement.

$T_{1/2} = 30.5$ days

Fig. 1. The figure shows the survival curve of ^{51}Cr -labelled G6PD Mahidol red cells in a normal subject. The arrow indicates the administration of acetaminophen after which the drop of the ^{51}Cr $T_{1/2}$ from the expected normal curve of 30.5 days (dotted line) is clearly demonstrated.

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surement. After withdrawal of the drug the experiment was performed for another week. The result is shown in figure 1. After 3 days of paracetamol administration, the drop of ^{51}Cr radioactivity in the circulation was conspicuous and this continued further during 2

weeks of paracetamol administration, resulting in a shortening of the $T_{1/2}$ from 30.5 (normal) to 20 days.

During the experiment the subject was symptom-less and no abnormality was detected. It should be emphasized that this result has shown the effect in a normal subject who had only a small amount of G6PD-deficient erythrocytes. It is likely that in G6PD-deficient subjects almost all of whose erythrocytes are G6PD-deficient, the result would be more remarkable. Therefore, paracetamol used in G6PD-deficient subjects, Mahidol variant, should be used prudently although the hemolysis is not as severe as that caused by other potent hemolytic drugs such as primaquine.

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