The application of Kastle-Meyer test to indentify Brown plant hopper, *Nilaparvata lugens (Stal)* as a non blood-feeding insect

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The brown plant hopper (*Nilaparvata lugens*) is a pest that normally found in paddle field around Naresuan University, Phitsanulok (fig. 1). This insect not only damages growing rice plant in the field but also causes irritation and rash on human skin. It is, therefore, assumed that this insect might acquire human blood as its nutrient source. Kastle-Meyer reagent (KM), which is also known as reduced phenolphtalin, is a presumptive blood test in forensics. A colorless reagent will turn pink when reacts with blood remain or hemoglobin. The aim of this study is to identify whether or not brown plant hopper is a blood-feeding insect.

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Brown plant hoppers were collected from Naresuan University campus and dormitory area, especially around light bulbs. The insects were collected using insect net. Each individual brown plant hopper was ground with a tissue grinding. The ground insect was put into a test tube, next, adding 1ml of 70% ethanol. Then 2 ml of KM reagent was added into the test tube. A pink solution was observed after adding 2 ml of 3% H₂O₂ into the test tube. If the sample contains blood, canine ticks and blood-feeding female mosquitoes were used as positive controls.

Results of this study indicated that brown plant hopper is not a blood-consuming insect because the reaction of the test is colorless. On the other hand, blood-feeding insects which used as positive controls turn pink reacting with the KM reagent (fig. 2). In 2001 Gutler et al found that the deject collected from cockroaches, spiders, crickets, beetle, predator bugs and domestic flies have shown negative results with the KM reagent, whereas the feces of triatomines, female Aedes aegypti and bed bugs have shown positive result². Some of our results is similar to the previous report. We found the KM reagent turned pink after reacting with blood-sucking insect; canine ticks and female mosquitoes. In addition, brown plant hopper sample gives a negative result. This result indicates that the pest is probably not a blood sucking insect. The irritation and rash developed on human skin may be just a hypersensitivity.

Other uses of the KM reagent have been reported for example, it was used to detected blood contamination on glucose meter³, in the emergency department or ambulance equipment⁴ and dental instruments⁵⁻⁹. With its low cost, effectiveness, and simple procedure, the KM reagent is very useful in identifying blood remains in living and non-living items. From our present data, it is evident that the KM reagent can be applied to screen for blood-feeding insect.

![Brown Plant Hopper, Nilaparvata lugens (Stal)](image-url)
Fig 2 Results of Kastle-Meyer test. A: Brown plant hopper; B: positive control (canine tick); C: positive control (female mosquito)

References


