

Serology - lab report example



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Serology

INTRODUCTION Presumptive blood tests are important, especially in the field of Forensics. The presence or absence of blood may corroborate the ment of a witness. Its specificity lies on the reaction of the chemicals to hemoglobin, a major component of blood. In this experiment, the presumptive test of blood was performed using leucomalachite green (LMG), phenolphthalein (PPT), and hydrogen peroxide. In the blood, hydrogen peroxide is degraded by peroxidase of hemoglobin into hydrogen and oxygen, turning the solution basic. The specificity of this test lies on the fact that hemoglobin is only contained in blood. This change in pH is then detected by phenolphthalein, and the solution turns into pink quickly, or leucomalachite green, which turns the solution into green (Houck and Siegel, 2010; Tobe et al., 2007). However, there are a few considerations in using these substrates. First, because phenolphthalein is a pH indicator, phenolphthalein reacts with any basic solution. It is thus important that the addition of LMG or PPT prior to the addition of hydrogen peroxide do not yield a color change. This ensures that any change in the solution results from the reaction of hemoglobin with hydrogen peroxide. Second, when the phenolphthalein is exposed too long in the solution, a spontaneous oxidation occurs causing the colorimetric reaction to occur (Houck and Siegel, 2010). The color change indicating presence of blood must thus be quick. Third, substances in fruits and vegetables may act like a peroxidase (Tobe et al., 2007).

MATERIALS AND METHODS Sample FS-26-07 was tested for the presence of blood using leucomalachite green (LMG) and phenolphthalein (PPT). Two set-ups were prepared. Each set-up consists of three spot plates each containing a strip of

1) positive control, 2) negative control, or 3) FS-26-07. The spot plates in the first set-up were added with two drops of LMG, while those of the second set-up were added with the same amount of PPT. The spot plates were then added with hydrogen peroxide. Colorimetric changes were noted. RESULTS

Table 1. Colorimetric change upon addition of Leucomalachite green sample

Color change after addition of leucomalachite green	Color change after addition of hydrogen peroxide
Positive control (blood)	No observable change
Green Negative control (blank)	No observable change
Sample (FS-26-07)	No observable change

Table 2.

Colorimetric change upon addition of Phenolphthalein sample	Color change after addition of phenolphthalein	Color change after addition of hydrogen peroxide
Positive control (blood)	No observable change	pink
Negative control (blank)	No observable change	No observable change
Sample (FS-26-07)	No observable change	No observable change

CONCLUSION Because the results of leucomalachite green-phenolphthalein test on FS-26-07 were the same as that of the negative control, it is thus conclusive that the sample does not contain blood. References Houck, MM and Siegel, JA. 2010. Fundamentals of Forensic Science. Academic Press: Oxford. p. 237. Tobe, SS, Watson, N and Daeid, NN. 2007. Evaluation of Six Presumptive Tests for Blood, Their Specificity, Sensitivity, and Effect on High Molecular-Weight DNA. J. Forensic. Sci. 52(1). 102-109.