

COMPARISON OF STABILITY LATENT FINGERPRINT ON PAPER WITH BLOOD STAINS.

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ABSTRACT

The aims of this research are to study the latent fingerprint remaining the period on paper with blood stains by on using iodine and ninhydrin methods to reveals determined the latent fingerprints and compared them qualities of them on 10 types of paper; copy paper, green read paper, newspaper, corrugated box, lottery ticket, magazine paper, cash bill, envelope, thermal slip and brown envelope with blood stains. The paper were selected from everyday life and they were investigated to find latent fingerprints in 2 different methods; iodine and ninhydrin methods. The numbers of latent fingerprints appearing were recorded. The result shows that the iodine method was detected the latent fingerprints on paper with blood stains but not in all papers. After comparing the method of the latent fingerprint by using independent T-test statistic, it was found that, a significance at the level of 0.05, both latent fingerprints appeared identical.

Keywords: latent fingerprints, paper, blood stains

INTRODUCTION

Thai social problems that occur resulting in crime. The evidence found at the crime scene were fingerprints and paper, with evidence of the type of paper or the latent fingerprints on the paper. Often found at the crime scene which the paper found will be photographed and collected for Identification in the laboratory because it is an important evidence in forensic science.

Fingerprint is one thing that every human being has in common. Even the twins with identical faces but have fingerprints that are only "similar" but "not the same". Fingerprint is therefore important to identify criminals found from the crime scene and the detective must search to find the crime scene. If the fingerprints of the criminals at the scene were found, the investigation is over 50% successful because the fingerprints of the whole world are not the same. The fingerprints are sometimes marks that cannot be seen with the naked eye or do not see clearly. This type of fingerprint that "Latent Fingerprints" when the criminal incursion is unable to avoid leaving the fingerprint. Latent fingerprints will occur when objects are touched [1].

Fingerprints, palms and footprint examination is a branch of personal identification based on the research of scientists for a long time, it is found that the stripes that appear on the fingers, palms, feet of humans can be used for examination and proof person due to the 2 truth are describe at following [1].

1. Individual fingerprints, palms and footprint of the individual are uniqueness which each person has different special characteristics.

2. The fingers, palms, footprint of each individual's feet do not change (permanence) from birth until death or even dead, if the body is maintained well, fingerprints, palms, footprints will remain unchanged.

Fingerprints are divided into 3 types, namely [2] 1. Arch type was divided into 2 types as plain arch and tented arch. 2. Loop type was divided into 2 types as right loop and left loop. and 3. Whorl were divided into 5 types such as Plain Whorl, Center Pocket Loop, Lateral Pocket Loop, Twinned Loop or Double Loop and Accidental Whorl with characteristics and fingerprints as shown in Figure 1 [3].

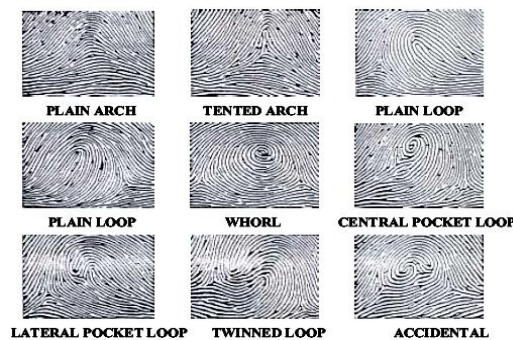


Figure 1. Type of the fingerprint were displayed unique characteristics of the whorl.

Currently, fingerprints are collected at the crime scene in anyway, depending on the conditions of the scene. The inspectors should be proficient in the selection of methods and equipment for proper collection by choosing according to the principles and application such as fingerprints on evidence; such as wet paper, wet wood or wet metal by wet method using the method of testing with ninhydrin, because it is a method to make the solution of the chemical to the fingerprints that are invisible and invisible and to record the fingerprints. If the visible fingerprint test, such as blood smeared fingerprints, uses the iodine method because the chemical produces a vapor or gas, reacts with the substance excreted from causing fingerprints.

Nowadays, workers use black powder, which is a physics method, to obtain fingerprints that are different in color from the evidence. By using this method, the dust will stick to the moisture and grease of the substance that is excreted by the finger, causing fingerprints for convenience and speed in operation.

From the problems mentioned above, the researcher is interested to study the fingerprints from the blood stains on different types of paper by iodine and ninhydrin methods to compare the quality of both methods on the paper, this study will be useful and can be utilized for fingerprint identification to find the offender and provide sufficient evidence for legal proceedings.

OBJECTIVES

1. To study latent fingerprints from different types of paper with blood stains using iodine and ninhydrin methods.
2. To compare the methods for collecting latent fingerprints on different paper with blood stain.

METHODOLOGY

Study of latent fingerprints from on different types of paper with blood stains using iodine and ninhydrin methods. By finding latent fingerprints from 10 different types of paper with blood stains, in which the researchers selected 10 types of paper; copy paper, green read paper, newspaper, corrugated box, lottery ticket, magazine paper, cash bill, envelope, thermal slip and brown envelope with blood stains as shown in Figure 2. The paper were selected from everyday life. After that, fingerprints were collected on different types of paper with blood stains using iodine and ninhydrin method.

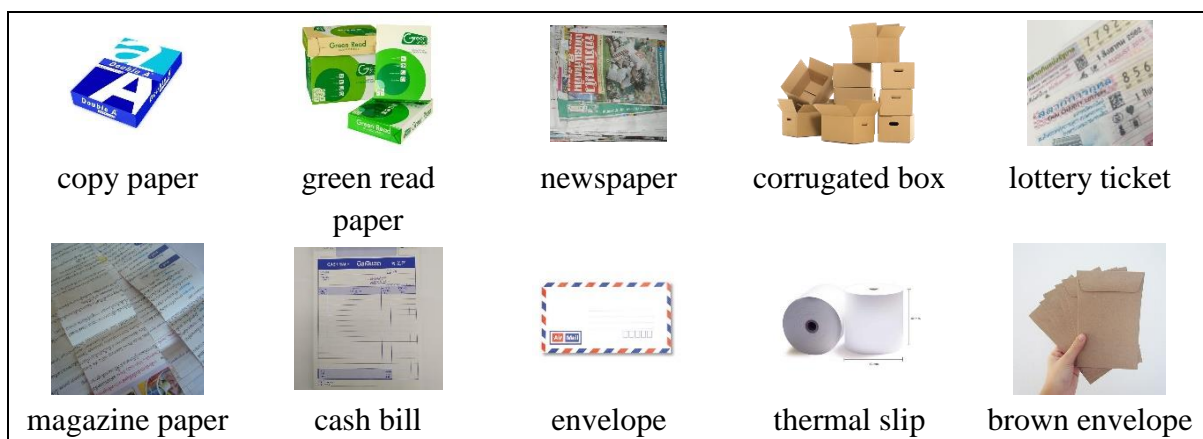


Figure 2. 10 types of paper

RESULTS

1. The results of the study on the quality of latent fingerprints on different types of paper with blood stains using iodine and ninhydrin methods.

From the experimental results to detect latent fingerprints on different types of paper with blood stains with 10 samples after iodine method better quality, sharpness and more readability of special features or defects special characteristic of minutiae than ninhydrin method are as follows;

1.1 The paper that passed the first criteria by iodine method was magazine paper, followed by green read paper, thermal slip, corrugated box, copy paper, envelope, cash bill, newspapers, lottery ticket and brown envelope, respectively.

1.2 The paper that passed the first criteria by ninhydrin method was newspaper, followed by magazine paper, copy paper, green read paper, corrugated box, lottery ticket, cash bill, envelope, thermal slip and brown envelope, respectively.

2. The results of the study comparison of fingerprints on different types of paper with blood stains using iodine and ninhydrin methods.

From the analysis using independent T-test statistic, it was found that the methods for collecting latent fingerprints on different paper on blood stains showed significant differences in latent fingerprints. Statistics at the level of .05

Table 1. Analysis of mean and standard deviation for collecting latent fingerprints on different paper and methods

COLLECTING LATENT FINGERPRINTS ON DIFFERENT PAPER	MEAN	STD. DEVIATION	STD. ERROR MEAN
1. Iodine Method			
1.1 The quality of latent fingerprints on paper	34.6667	20.37367	6.44272
1.2 The quality of latent fingerprints on paper with blood stains	11.0333	6.85556	2.16792
2. Ninhydrin Method			
2.1 The quality of latent fingerprints on paper	19.9333	17.89393	5.65856
2.2 The quality of latent fingerprints on paper with blood stains	2.8667	6.04346	1.91111

Table 2. Analysis of results to comparison of latent fingerprints detected by iodine and ninhydrin method

COMPARISON OF LATENT FINGERPRINTS DETECTED BY IODINE AND NINHYDRIN METHOD	MEAN	STD. DEVIATION	T	SIG. (2-TAILED)
The quality of latent fingerprints on paper	14.73333	15.50691	3.005	.015*
The quality of latent fingerprints on paper with blood stains	8.16667	7.90569	3.267	.010*

*statistical significance at 0.05

DISCUSSION

1. The results of the study on the quality of latent fingerprint on different types of paper with blood stains using iodine and ninhydrin methods are as follows:

1) Iodine method

From the experiment, it is found that it can detect latent fingerprints on magazine paper blood stains because the semi-porous substrate has the property of a compound of latent fingerprints, it is quickly absorbed into the surface of the object. In which the compound of the latent fingerprint marks, the water-soluble part is absorbed in a matter of hours. The insoluble part will be absorbed within a few days and the properties of iodine, when exposed to a small amount of heat will transform into sublimation vapor, in contact with objects that are thought of latent fingerprints. Iodine will bind to fat or fatty substances that will absorb iodine vapor when smoked the witness material with iodine latent

fingerprints containing oil or fat absorb the iodine vapor, causing the latent fingerprints to appear brown, visible to the naked eye. The fingerprint that appears is permanent, the stripes will gradually fade when stopped which is consistent with the study of Vichot Buraphachanok [4], who has detected multiple fingerprints on paper using iodine smearing.

2) Ninhydine method

From the experiment, it is found that the best latent fingerprints can be detected from blood stains on copy paper because the porous surface area has the property of a compound of fingerprint marks, it is quickly absorbed into the surface of the object. In which the compound of the latent fingerprint marks, the water-soluble part is absorbed in a matter of seconds. The insoluble part takes about 1 day to absorb and the properties of the substance hydride will react with the proteins in sweat. (Amino acid in sweat) causes the latent fingerprints to turn purple and blue and be collected by taking a photograph immediately. In which heat is a catalyst therefore may use iron or electric dryer as a catalyst for fingerprints, the ninhydrin method is not suitable for paper that has text in a book or is written with ink in document paper because the message will dissolve which is consistent with the study of Wanlop Semathong [5] has conducted research on the detection of latent fingerprints from blood stains on different types of paper by ninhydrin method.

2. Comparison of latent fingerprints detected by iodine and ninhydrin method

Methods for collecting latent fingerprints on different paper using iodine method when compared to the ninhydrin method, the preparation process is not complicated. Also, when researching does not require techniques and modern equipment can detect latent fingerprints in saving time and money which can be summarized that Iodine method with latent fingerprints are good quality, can be used for better identification than ninhydrin method on paper with a semi-porous surface and without porosity. Therefore, when examining the latent fingerprints on paper, iodine methods should be chosen for the collection. In addition, the results show that the different streaks of fingerprints that occur on paper are also found to be different. Aside due The skin physiological condition of each person that prints the fingerprints on paper. In some types of paper, the fingerprint will be clear. Some types of paper appear with faded latent fingerprint marks may be due to the secretion of sweat, moisture and fat are different in each person factors that affect the secretion of sweat and sebaceous glands include temperature, mood, and humidity, which may vary from day to day. Therefore, there are few differences in the fingerprints on each type of paper. Resulting in unclear fingerprints, including the small fingerprints of a person once the fingerprints are stamped on the paper and then used to find a way to detect fingerprints. The result may be unclear about fingerprints. In general, the person who is committing the crime Pressure often causes the mind to cause emotional stress which in theory, is at least more likely to sweat more while in normal environments. Therefore, there is a tendency to have latent fingerprints of criminals at the crime scene that is quite obvious [6].

SUGGESTION

1) According to the research, it is found that the iodine method is effective in collecting latent fingerprints on paper with blood stains but when leaving the time period of the fingerprint that appears, the fingerprint will fade away and a slight inhalation of iodine is not dangerous but long-term inhalation of iodine will cause irritation of the skin, the respiratory system is a cancer-causing toxin.

2) According to the study, it is learned that ninhydrin method is not suitable for experiments on paper with blood stains.

3) Further studies should be made to find the time remaining for fingerprints from the blood stains of each period and the durability of latent fingerprints on other types of paper, such as photo paper, as well as studying other chemicals that will help extend the life of latent fingerprints.

ACKNOWLEDGMENT

This research has been assisted by Suan Sunandha Rajabhat University as well as the management of the Research and Development Institute. Faculty of Science and Technology which has supported the budget in conducting this research.

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