

**PERMANENCE OF THE FRICTION RIDGES OF THE PINEAPPLE FRUIT VENDOR:
A CASE STUDY IN BELAGAVI CITY.**

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ABSTRACT

Fingerprint recognition is one of the successful methods used for person identification, which takes advantage of the fact that the fingerprint has some unique characteristics called minutiae. Fingerprints are considered as permanent and doesn't change even as people age. Although they remain permanent and unique, fingerprints are absent in some rare conditions like leprosy, mutilation, some rare skin disorders, medical condition like adermatoglyphia, old age etc. The present research article intends to study the effects of **Bromelain** on the fingerprints of pineapple fruit vendors to specifically test the permanence principle. Bromelain is an acid present in the pineapple fruit. It is unearthed that because of the chemical bromelain in pineapple, the fingerprints of fruit vendors tend to dissipate which is still unproved. Here the photographs of fingerprints of concerned fruit vendors will be collected using a controlled and experimental method. The controlled samples will be the fingerprints of other fruit vendor and the experimental samples will be the fingerprints of pineapple fruit vendor. Thus, the comparative study between the controlled and experimental samples will be conducted in order to test the hypothesis.

Key words: - Bromelain, Minutiae Characteristics, Permanency.

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INTRODUCTION

Fingerprint is one of the form of biometrics, a science that uses people's Physical Characteristics to identify them. Fingerprints are known for their uniqueness, permanence, universality, simplicity of recording and simplicity of classifying which are the basic principles of fingerprints. Thus because of these principles it was said that they are permanent and does not change even as people age and can vanish permanently only if mutilation occurs or some kind of skin disorder. Friction ridges on the fingers, palms and soles of the feet remain a standard for positive identification purposes to track arrests and imprisonment, to support criminal investigations, to aid in humanitarian efforts by identifying unknown decedents in a mass disaster and to serve as a biometric identifier in modern day functions.

Permanence of friction ridge detail is an underlying assumption of fingerprint identification. Permanence is defined as the unchanging presence and appearance of friction ridge arrangements and their attributes between observations of the skin. Permanence can be best assessed by direct observations of the skin and may be confirmed by comparing photographs of the fingers collected over time. In previous times when no technology was available, impressions were used to

investigate permanence. Interpretation of impressions is complicated by effects of pressure, matrix, substrate and image capture. Due to these factors, no two impressions of the same fingers are ever alike and any comparison between two different samples was also difficult and time consuming. Permanence connotes everlasting stability but a chemical named Bromelain, present in the pineapple fruit is known to have some deteriorating effects on the friction ridges. Thus questioning the permanency of fingerprints; one of the most reliant and important principle in the field of Dactyloscopy.

The Pineapple, botanically named *Ananas comosus*, has been used for centuries as a folk medicine by the tropics. Pineapple is considered as a flesh eating material, which can worn out your fingerprints if used overtime (Sir S.H.W 2012). The medicinal qualities of the plant are attributed to bromelain, the aqueous extract of the pineapple. Bromelain has been used as a supplement with health benefits for the management of a number of clinical conditions, including infections, inflammatory diseases, musculoskeletal injuries and is also used as an anticancerous agent (Afshin Amini et al). As yet no particular scientific study is conducted to test the permanency principle on the fingerprints of the pineapple fruit vendor, this study ensures to test the relevancy of permanence principle on the fingerprints of pineapple fruit vendors.

Objectives Of the Study

- To Testify the permanence of Fingerprints in the pineapple fruit vendor and other fruit juice vendor.

RESEARCH METHODOLOGY

Aim of the study

To know whether the fingerprints of the pineapple fruit juice vendor permanently dissipates.

Research Method

As the research involves experimenting and analysing of the fingerprints of the pineapple and other fruit vendors, researcher has opted the experimental study. Experimental study involves the control and the experimental groups in which the control group is the other fruit vendor and the experimental group is the pineapple fruit juice vendor. These both groups receive a experimental treatment to determine scientifically the differences between the two. Primary source of data collection method was opted using non probability sampling with convenient sampling has been used to collect data from the control and experimental groups. Since it was difficult taking their rolled prints, photographs of the fingerprints were taken and data was collected by taking clear and translucent pictures of the fingerprints of the control and experimental groups. As the research involves experimental study, the results and conclusion will be obtained by analysing and comparing of the fingerprints of both control and experimental groups scientifically.

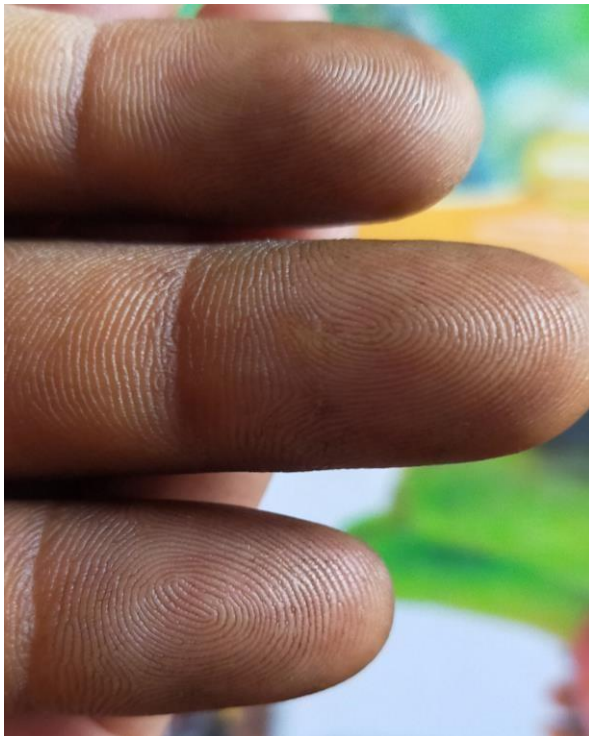
Limitations Of The Study

- The present research study involves only Belagavi city.

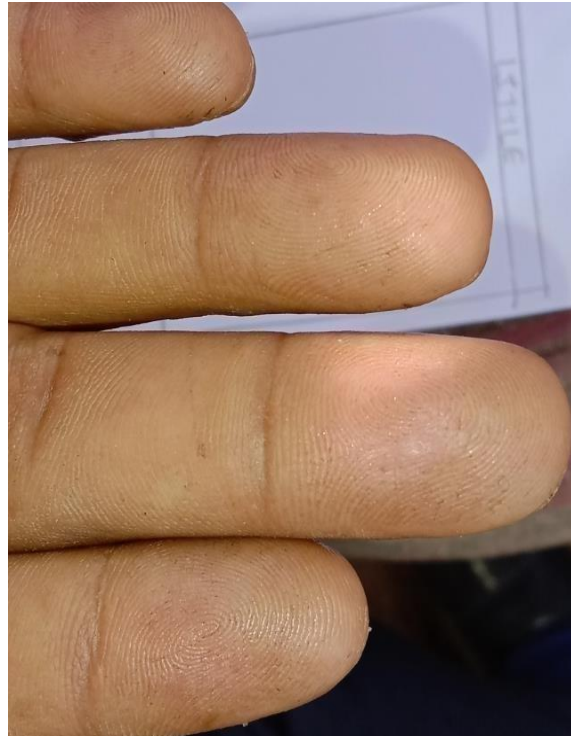
- Current research is based particularly on the pineapple fruit vendor.
- The fruit vendors were not ready to cooperate.
- Sampling and non-sampling and any other errors can occur.

RESULTS AND DISCUSSIONS

Samples for the controlled and experimental variables.



Control Group



Experimental Group

As seen in the above samples one is a control group involving fingerprints of the vendor who doesn't work with pineapple fruit and the other is an experimental group showing fingerprints of pineapple fruit vendors.

On comparing the two groups we can clearly make out the differences in their fingerprints. In the control group the fingerprint patterns of the fingers are clearly visible showing the minutiae characteristics like for example the index finger has a twin loop pattern having minutiae characteristics like two cores, two deltas, bulbs, bifurcations, ridge ending, hook, fork, break, short ridge etc. Thus the other fingers are also having fingerprints of same accuracy while its not the same with the experimental group.

The fingerprints are not so clearly visible though the researcher could make out the patterns but finding the minutiae characteristics was a task. The index finger shows the whorl pattern having minutiae characteristics like the core, Delta, bifurcation, bulb, short ridge, hook, it was a bit

difficult identifying because the finger had many cuts of knife as well which they must have used while cutting the fruit. Though the pattern in the index finger was visible but its not the same with the middle finger. The author couldn't make out the pattern itself whether it is a whorl pattern or a twin loop because the skin from that finger has worn out and thus the same goes with the other fingers as well in some of the fingers the patterns were visible and in some it wasn't and finding the minutiae characteristics was a task. When interviewed the pineapple Fruit vendor mentioned that he is working in this profession from 10 years and said that working with the fruit on daily basis causes a lot of irritation, burn and pain, accepting the presence of some acid in the fruit. When asked the fruit vendor also addressed that if they stop working for a month or so than their skin reappears and the pain lessens but if they don't and continue working than the pain worsens causing red rashes on the fingers damaging the fingerprints. The fruit vendor also affirmed that whenever they scan their fingerprints for any personal requirements, the scanner couldn't detect most of their fingerprints which eventually could be the cause of working with the fruit for a longer period of time.

CONCLUSION

As we all know in the field of forensic science fingerprints and DNA evidences are considered as the substantial evidences. Fingerprints and DNA evidences include an individual's personal details which are known to stay with an individual even after one's death. Fingerprint science works on the basis of its most important principles and the above study is all about testing one of the most important principle "Permanence" among the fingerprints of the pineapple fruit vendor. Up until now no precise scientific study was conducted on the fingerprints of the pineapple fruit vendors. As per the research conducted on the fingerprints of the pineapple fruit vendor, the author concluded that may be on working with the fruit for a longer period of time, there are maximum chances that bromelain can affect the permanency of fingerprints and hence can damage the friction ridges and minutiae characteristics to an extent that they cannot be detected. This opinion was made after encountering the poor quality fingerprints of pineapple fruit vendor which caused difficulty in detection, analysing and comparison of fingerprints. Also one literature study talks about a cancer patient whose chemotherapy treatment dissipated the fingerprints permanently because it is said that chemotherapy drugs include bromelain in it, as it is one of the major anticancerous enzyme.

Thus it can be assumed that some of the minutiae characteristics of the fingerprints of the pineapple fruit vendors could dissipate permanently, if the vendor has been working with the fruit for a longer period of time. The current research article is a simple study done to test the hypothesis, in order to conduct a thorough study in future with accurate amount of data.

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