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A Study of the consideration of bio monitoring of trace Elements in the human nail for the Biometric Authentication

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ABSTRACT

The studies of trace element composition in the human nail is called as human bio monitoring. The composition of the chemicals and trace elements and concentration of the chemicals and trace elements in the human body fluids and human body tissues are observed .The concentration of trace elements for a healthy human being is stable for a particular period of time in their nail and also the composition of chemical elements in the nail differs to each individual. So the humans nails can be used as the bio marker for monitoring or quantifying the composition of chemicals (major and trace elements) in the human body. So trace element's composition and concentrations in the nail can be considered for Bio-metrics authentication in future. Because the chemical composition of nail and chemical concentration in the human nail differ from one people to another people and so this can be used to identify the individual in future.

Index terms–elements, trace elements, human bio monitoring, human body,nail

I.INTRODUCTION

Human bio monitoring is the concept of monitoring the composition and concentration of chemical elements in the human body. It play a major role in identifying the relationships between the nutrition, health status, dietary intake and environmental exposure.

The biological fluids such as blood, urine, sweat, exhaled breath condensate, saliva, earwax, body milk and tears, as well as in adipose tissue and, biological tissues such as hair and nail are analysed and measured for the existence of elements[1].

There are many analytical techniques at present available for checking the element composition and element concentrations in nails such as inductively coupled plasma mass spectrometry and atomic absorption spectrometry[2].

II. NAIL AS A BIO MARKER

Biological tissues like nails are utilised as bio metrics for evaluating the environmental

pollution level by learning chemical element composition in nail. The people exposed to environmental pollution can be known through the abnormality of chemical element concentrations in nail samples. the explanation for victimisation fingernails as diagnostic material is that trace components accumulated within the nails will replicate the future exposure to environmental pollution. Excluding that nails may be simply collected and hold on at traditional temperature before analysis and tiny amounts of samples (about ten mg) area unit needed for analysis[3].

The chemical compositions of nails might depend on gender, nutrition, occupation, age, unwellness and season[4]. Each fingernails and toenails are used as biomarkers, every has explicit benefits and drawbacks. nail grows quicker than toenails therefore oft sampling is simple. However, the nail is usually additional exposed to exogenous This lead to an increase in the available knowledge on the extent of human exposure to chemical substances. It may generate number of opportunities for improving human health risk assessment because it triggers new research investigating the links between low-level exposures, adverse health effects, and potentially vulnerable population groups.

This is of explicit interest in sight of the enhanced attention for individualised exposure data from the final public once adverse health effects area unit just suspected from environmental exposure to chemicals. It conjointly stresses the importance of scientifically sound and reliable interpretation of bio observance.

IV. BIO MONTITORING USING HUMAN NAIL

Analysis of the part of chemical element or element in toenails can be used as a tool in bio monitoring the exposure history or assessing the deficiency of a specific element in an exceedingly study population, which might result in a higher chemical components, And such a contamination therefore results in an huge amount endogenous chemical components.

On different hand, such AN exposure also can be converted into a chance for watching the impact of handling deadly chemicals. Toenails is also additional protected against exogenous exposure, and therefore is also an improved choice for measure of the relevant chemical elements[4].

III. BIO MONITORING

Bio monitoring is the measurement of the concentrations of chemical substances in human body fluids and tissues. It has been widely applied in industry and public health. The increasing availability of analytical methodologies with a constant decrease in detection limits make bio monitoring both more accessibleandmoresensitive.

under-standing of environmental and health risk. it will be employed in medical diagnosis conjointly.

The connected studies unit of measurement Hair and nail clippings have the additional potential of providing a time-window: it's assumed that once the weather unit of measurement immobilized among the nail albuminoid, in order that the quantity measured in an exceedingly sure layer may be a marker for that parts at the instant of its formation within the past. The materials could thus act as a supply of knowledge on the sem ipermanent variations within the health standing, on the impact of nutrition and on activity exposure [5-10], still as in rhetorical sciences. Nail clippings and hair will be simply obtained, even in post-mortem circumstances. The potential non secular or cultural objection against providing hair samples will be overcome by grouping nail clippings. The recognition of nail clippings began to grow towards the top of the 1970.

V. COMPONENTS OF NAIL ELEMENT

The main component of the human nail is keratin l. The growth of the nail normally takes 2 to 3 months to reach the finger tip.

So that it can be clipped easily from there. The process of formation of the hair is too slow and the length of formation is .5 to 1mm per week.

The indicator of aging can be measured by the finger nail and toenail. The important properties of nail such as thinning in nail, discoloration in nail, grooves in nail, splitting in nail, thickening in the nail, concave and convex shape in the nail are also to be taken in to consideration for various symptoms of disease in the human body. The flatness of a nail can be used as to indicate disease in the body, nutrient deficiencies, drug reaction and poisoning or nail injury.

VI. TRACE ELEMENTS IN TOE NAIL

The thickness of nail modification or unsnarled and infected with microorganism indicates the unhealthiness sign of sure illness within the organic structure The human nail is leaky than skin and therefore the composition of human nail consists of seven to twelve-tone music of water, in order that it's a solid half in body.The nails square measure littered with pain and conjointly the nails square measure affected with stretched, tight and cosmetics. Nails once growth still keep isolated from various metabolic activities at intervals the physique, that's taken under consideration as associate honest reflection of long-run exposure. The advantages of nails in elements analysis square measure fascinating biomarker as a result of simple assortment, storage convenience, simple handling and dependableness of later analysis results. The nails from various fingers in feet and hands grow in several weeks of it slow between formation and clipping that indicates exposure to elevated concentration contamination integrated over a try of - twelve month quantity . The amount of part in nails square measure subject of interest at intervals the medical science and environmental sciences since recent years. The activity of nail remains the subject of interest as indices for assessing process standing, designation diseases, characteristic general intoxication and environmental exposures. The thought of elements contents at intervals the nails are thought-about as degree indicator of level in various tissues that mirror mineral metabolism at intervals the body. The connected studies square measure Hair and nail clippings have the additional potential of providing a time-window: it's assumed that once the weather square measure immobilized at intervals the nail scleroprotein, therefore the variety measured throughout a certain layer can be a marker for that elements at the moment of its formation at intervals the past. The materials might therefore act as an offer of data on the semi permanent variations at intervals the health standing, on the impact of nutrition and on activity exposure [5-10], to boot as in rhetorical sciences. Nail clippings and hair are merely obtained, even in post-mortem circumstances. The potential religious or cultural objections against providing hair samples are overcome by aggregation nail clippings. The popularity of nail clippings began to grow towards the highest of the 1970

VII. VARIATION OF TRACE ELEMENT

Tear and sweat offer data over a brief time-window. These tissues and body fluids will be necessary for selections on procedures to be taken just in case of deficiency disease, contamination, or simply check the organic process standing at the time. Samples like nail and hair are studied as further thanks to appraise organic process aspects throughout a large time-window. Nail and hair square measure fashioned by a brief amount within the body, and receive many nutrients and trace parts that square measure gift within the body in this moment.

when formation by the body, the nail and hair from traditional folks much stay with constant structure and composition till be sampled Human nails, which are formed by keratin cells grow as new cells eventhough it replace the old ones. Unlike height, human nails grow during the entire lifetime. The growth of nails, as well as their matrix components, is influenced by several physiological, pathological, and environmental factors. It has been reported that the average growth rate of nails is 0.1 mm every day, depending on age and race to our best knowledge, little is known about the growth rate of nails in the Chinese population. Because of the relatively low growth rate, nail clippings have been used as an important biomarker to reflect relatively long-term exposure as a biomarker, nails have the unique advantage of application in population monitoring studies due to non-invasive sample collection and easy storage However, and nails have not been used as blood and urine in research and health diagnosis. Besides polluting metals, nails also contain essential elements including macro elements and microelements, whose determination may provide a way for assessing nutritional status]. Element research in nails has received less attention for essential elements than toxic elements.

CONCLUSION

The elements on the market within the physique square measure very important for the assorted physiological activities of the physique and it may also be used as a drug within the hindrance of diseases and management of the many diseases. The importance of the part within the physique has taken longer for its recognition. Currently solely it achieved the standing. Nearly half the world's population is at the chance of not taking the part in a very correct method and in difficiency. The weather within the physique square measure currently being investigated that it's utilised in a very wide selection from therapeutic activity, biometric identification, drug and sequence delivery, to nano technology with promising outcomes within the future. Thus, it may be complete that the role of components gift within the physique and their significance and thought for biometric identification are going to be a vital analysis space within the future.

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