Imperial Journal of Interdisciplinary Research (IJIR)
Vol-3, Issue-4, 2017
ISSN: 2454-1362, http://www.onlinejournal.in

Bio Metric Authentication Using Elements in the Body

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Abstract : *Human beings are living with the food. This food is the combination of elements to the body. The body contains lot of elements. The level of these elements in the human body is measured and stored in a database. With this quantity stored we can easily identify a person. Elements level can be checked at proper interval and these data can be taken for the biometric authentication. Elements can be identified and quantity of each and every element must be measured and recorded. the element are found in saliva,urine,blood,hair etc. , Biometrics also known as biometric authentication, can be defined as a discipline thatconsists of procedures for recognizing human based or any other intrinsic behavioral features. The biometric trait can be divided into two main types: ● Behavorial – This is linked with the behavior of a person identified with features like typing speed, voice quality, walking gait, sitting posture and much more. Certain scholars and medical researchers also use the term "behaviometrics" to define this category. ● Physiological – This is associated with the shape of the body of an individual. In this case, instances such as fingerprint, face recognition, iris recognition, DNA, hand geometry can be considered.With this we can aslso consider this element biometric authentication.*

Keywords *: authentication, elements, tracing elements*

1.Introduction to biometric authentication using elements

Biometric Authentication is any process that validates the identity of a user who wishes to sign into a system by measuring some intrinsic characteristic of that user. Biometric samples include finger prints, retinal scans, face recognition, voice prints and even typing patterns. This paper devise a new techninique of bio-metric a authentication using elements in the human body and their quantity level. Some elements in the body may vary in their level but most of the element is common and their level is also constant for aparticular period. This can be a new invention in bio-metric authentication in future.In this paper it is presented with the essential elements in the human body already found .

2. Elemental Composition of the Human Body

The table below gives the amount of each chemical element found in the human body, from most to least redundant. For each element, there is the amount in mass units in an averge (70-kilogram) person, the volume of the element, and the length of the side of a cube that would contain that amount of the pure element. Volumes of solid and liquid elements are based on density at or near room temperature (where available). For the gaseous elements (oxygen, hydrogen, nitrogen, chlorine, and fluorine), used the density of each in the liquid state at the respective boiling point.

Element	Mass of element in a 70-kg person	volume of purified element	Element would comprise a cube this long on a side:
oxygen	43 kg	37 L	33.5 cm
carbon	16 kg	7.08 L	19.2 cm
hydrogen	7 kg	98.6 L	46.2 cm
nitrogen	1.8 kg	2.05 L	12.7 cm
calcium	1.0 kg	645 mL	8.64 cm
phosphorus	780 g	429 mL	7.54 cm
potassium	140 g	162 mL	5.46 cm
sulphur	140 g	67.6 mL	4.07 cm
sodium	100 g	103 mL	4.69 cm

chlorine	95 g	63 mL	3.98 cm
magnesium	19 g	10.9 mL	2.22 cm
iron	4.2 g	0.53 mL	8.1 mm
fluorine	2.6 g	1.72 mL	1.20 cm
zinc	2.3 g	0.32 mL	6.9 mm
silicon	1.0 g	0.43 mL	7.5 mm
rubidium	0.68 g	0.44 mL	7.6 mm
strontium	0.32 g	0.13 mL	5.0 mm
bromine	0.26 g	64.2 µL	4.0 mm
lead	0.12 g	10.6 µL	2.2 mm
copper	72 mg	8.04 µL	2.0 mm
aluminum	60 mg	22 µL	2.8 mm
cadmium	50 mg	5.78 µL	1.8 mm
cerium	40 mg	4.85 µL	1.7 mm
barium	22 mg	6.12 µL	1.8 mm
iodine	20 mg	4.06 µL	1.6 mm
tin	20 mg	3.48 µL	1.5 mm
titanium	20 mg	4.41 µL	1.6 mm
boron	18 mg	7.69 µL	2.0 mm
nickel	15 mg	1.69 µL	1.2 mm
selenium	15 mg	3.13 µL	1.5 mm
chromium	14 mg	1.95 µL	1.3 mm
manganese	12 mg	1.61 µL	1.2 mm
arsenic	7 mg	1.21 µL	1.1 mm
lithium	7 mg	13.1 µL	2.4 mm
cesium	6 mg	3.2 µL	1.5 mm
mercury	6 mg	0.44 µL	0.8 mm
germanium	5 mg	0.94 µL	1.0 mm
molybdenum	5 mg	0.49 µL	0.8 mm
cobalt	3 mg	0.34 µL	0.7 mm
antimony	2 mg	0.30 µL	0.7 mm
silver	2 mg	0.19 µL	0.6 mm
niobium	1.5 mg	0.18 µL	0.6 mm
zirconium	1 mg	0.15 µL	0.54 mm
lanthanium	0.8 mg	0.13 µL	0.51 mm
gallium	0.7 mg	0.12 µL	0.49 mm
tellurium	0.7 mg	0.11 µL	0.48 mm
yttrium	0.6 mg	0.13 µL	0.51 mm
bismuth	0.5 mg	51 nL	0.37 mm
thallium	0.5 mg	42 nL	0.35 mm
indium	0.4 mg	55 nL	0.38 mm
gold	0.2 mg	10 nL	0.22 mm
scandium	0.2 mg	67 nL	0.41 mm
tantalum	0.2 mg	12 nL	0.23 mm
vanadium	0.11 mg	18 nL	0.26 mm
thorium	0.1 mg	8.5 nL	0.20 mm
uranium	0.1 mg	5.3 nL	0.17 mm
samarium	50 µg	6.7 nL	0.19 mm
beryllium	36 µg	20 nL	0.27 mm
tungsten	20 µg	1.0 nL	0.10 mm

Oxygen is the most abundant element in the earth's crust and in the body. The body's 43kilograms of oxygen is found mostly as a component of water, which makes up 70% of total body weight. Oxygen is also an integral component of all proteins, nucleic acids (DNA and RNA), carbohydrates, and fats.

Rubidium is the most abundant element in the body (0.68 g) that has no known biological role.(**silicon**, which is slightly more abundant, may or may not have a metabolic function).

Vanadium is the body's least abundant element (0.11 mg) that has a known biologic role,followed by **cobalt** (3 mg), the latter being a constituent of

vitamin B12.The last of the body's elements to be discovered was **fluorine**, by Moissan in 1886.

3. Elements in the Human Body and What They Do? .

Nearly 99% of the mass of your human body consists of just 6 chemical elements: oxygen, carbon, hydrogen, nitrogen, calcium, and phosphorus. Another 5 elements make up most of the last percentage point: potassium, sulfur, sodium, chlorine, and magnesium. Here's a look at these elements in their pure form and their function in the human body. Note that the percentage are estimates. Hydration level (how much water you drink) makes a big impact on the amount of oxygen and hydrogen in your body and affects the relative composition of the rest of the elements in your body.

Oxygen (O) – 65% of body weight

Oxygen is the most abundant element in the human body. It's mainly found bound to hydrogenin the form of water. Water, in turn, makes up about 60% of the human body and participates incountless metabolic reactions. The element oxygen acts as an electron acceptor and oxidizingagent. It is found in all four of the major classes of organic molecules: protein, carbohydrates, lipids, and nucleic acids. Because it is a key element in aerobic cellular respiration, largeamounts of oxygen are found in the lungs and in the bloodstream. Hemoglobin in blood bind theoxygen molecule, O2, from inhaled air. Oxygen is used by the mitochondria in cells to producethe energy molecule adenosine triphosphate or ATP. While it's essential for human life, too much oxygen can be deadly, as it can lead to oxidative damage to cells and tissues.

Carbon (C) – 18% of body weight

Carbon is the second most abundant element in the human body and the element that is considered the basis of organic chemistry. Every single organic molecule in your body contains carbon. The element bonds to itself to form chains and ring structures that serve as the basis for all metabolic reactions in the body. Carbon in carbon dioxide is expelled as a waste product when you breathe.

Hydrogen (H) – 10% of body weight

Most of the hydrogen in the body is bound with oxygen to form water, H2O. Hydrogen, like carbon, is found in every single organic molecule in the body. Hydrogen also acts as a proton or positive ion in chemical reactions.

Nitrogen (N) – 3% of body weight

Because most of air consists of nitrogen, nitrogen gas is found in the lungs, but it is not absorbedinto the body that way. Humans get nitrogen from food. The element is an important component of amino acids, which are used to build peptides and proteins. Nitrogen is also an essential component of the nucleic acids DNA and RNA and all of the other molecules derived from the nitrogenous bases.

Calcium (Ca) – 1.4% of body weight

About 99% of the body's calcium is found in bones and teeth, where the element is used to build strong structural compounds, such as hydroxyapatite. Although most of the calcium is in bones and teeth, this is not the mineral's most important function. Calcium is an important ion, used in muscle contraction and protein regulation. If any critical function has insufficient calcium, the body will actually pull it out of the bones and teeth. This can lead to osteoporosis and other problems, so it's important to get enough dietary calcium.

Phosphorus (P) – 1% of body weight

Like calcium, the element and mineral phosphorus is found in the bones and teeth. The element is also found in nucleic acids and energy molecules, such as ATP (adenosine triphosphate).**Phosphorus** (1%) is found predominantly in bone but also in the molecule ATP, which provides energy in cells for driving chemical reactions.

Potassium (K) – 0.25%

Electrochemistry in the body depends on ions. Of these, the cation potassium is among the most important. Potassium is used in nerve conduction and regulating the heart beat. All cells in the body require potassium in order to function.

Sulfur (S) – 0.25%

Sulfur is found in several important amino acids, which are used to build proteins in the body.Sulfur is found in biotin, methionine, thiamine, and cysteine.

Sodium (Na) – 0.15%

Sodium, like potassium, is an essential cation. This element is important for nerve transmission and muscle function.

Chlorine (Cl) – 0.15%

Chlorine is an important anion. One of its functions involves the transport of the enzyme ATPase, which is used to supply energy for biochemical reactions. Chlorine is used to make hydrochloric acid, which is found in the stomach and digests food.

Magnesium (Mg) – 0.005%

Magnesium binds to ATP and nucleotides. Its cation is an important cofactor for enzymatic reactions.magnesium is used to build healthy teeth

and bones. **Magnesium** (0.05%) plays an important role in the structure of the skeleton and muscles. It also is necessary in more than 300 essential metabolic reactions.

Potassium (0.25%) is an important electrolyte (meaning it carries a charge in solution). It helps regulate the heartbeat and is vital for electrical signaling in nerves.

Sulfur (0.25%) is found in two amino acids that are important for giving proteins their shape.

Sodium (0.15%) is another electrolyte that is vital for electrical signaling in nerves. It also regulates the amount of water in the body.

Chlorine (0.15%) is usually found in the body as a negative ion, called chloride. This electrolyte is important for maintaining a normal balance of fluids.

Iron (0.006%) is a key element in the metabolism of almost all living organisms. It is also found in haemoglobin, which is the oxygen carrier in red blood cells. Half of women don't get enough iron in their diet.

Calcium (1.5%) is the most common mineral in the human body — nearly all of it found in bones and teeth. Ironically, calcium's most important role is in bodily functions, such as muscle contraction and protein regulation. In fact, the body will actually pull calcium from bones (causing problems like osteoporosis) if there's not enough of the element in a person's diet.

Fluorine (0.0037%) is found in teeth and bones. Outside of preventing tooth decay, it does not appear to have any importance to bodily health.

Zinc (0.0032%) is an essential trace element for all forms of life. Several proteins contain structures called "zinc fingers" help to regulate genes. Zinc deficiency has been known to lead to dwarfism in developing countries.

Copper (0.0001%) is important as an electron donor in various biological reactions. Without enough copper, iron won't work properly in the body.

Iodine (0.000016%) is required for making of thyroid hormones, which regulate metabolic rate and other cellular functions. Iodine deficiency, which can lead to goiter and brain damage, is an important health problem throughout much of the world.

Selenium (0.000019%) is essential for certain enzymes, including several anti-oxidants. Unlike animals, plants do not appear to require selenium for survival, but they do absorb it, so there are several cases of selenium poisoning from eating plants grown in selenium-rich soils.

Chromium (0.0000024%) helps regulate sugar levels by interacting with insulin, but the exact mechanism is still not completely understood.

Manganese (0.000017%) is essential for certain enzymes, in particular those that protect mitochondria — the place where usable energy is generated inside cells — from dangerous oxidants.

Molybdenum (0.000013%) is essential to virtually all life forms. In humans, it is important for transforming sulfur into a usable form. In nitrogen-fixing bacteria, it is important for transforming nitrogen into a usable form.

Cobalt (0.0000021%) is contained in vitamin B12, which is important in protein formation and DNA regulation.

Human body and chemicals

Most of the human body is made up of water, H2O, with cells consisting of 65-90% water by weight. Therefore, it isn't surprising that most of a human body's mass is oxygen. Carbon, thebasic unit for organic molecules, comes in second. 99% of the mass of the human body is madeup of just six elements: oxygen, carbon, hydrogen, nitrogen, calcium, and phosphorus. You may also wish to view the element composition of an average human body by mass.

1. Oxygen (65%)
2. Carbon (18%)
3. Hydrogen (10%)
4. Nitrogen (3%)
5. Calcium (1.5%)
6. Phosphorus (1.0%)
7. Potassium (0.35%)
8. Sulfur (0.25%)
9. Sodium (0.15%)
10. Magnesium (0.05%)
11. Copper, Zinc, Selenium, Molybdenum, Fluorine, Chlorine, Iodine, Manganese, Cobalt, Iron
(0.70%)
12. Lithium, Strontium, Aluminium, Silicon, Lead, Vanadium, Arsenic, Bromine (trace amounts)

Other elements

Trace elements include iron, fluorine, zinc, silicon, rubidium, strontium, bromine, lead, copper and many more. Some trace elements are essential or

have a beneficial effect on the body, while others have no known function or appear to be toxic. Some of the more prominent representatives are called macro nutrients, whereas those appearing only at the level of parts per million or less are referred to as micronutrients. These nutrients perform various functions, including the building of bones and cell structures, regulating the body's pH, carrying charge, and driving chemical reactions. The FDA has set a reference daily intake for 12 minerals (calcium, iron, phosphorous, iodine, magnesium, zinc, selenium, copper, manganese, chromium, molybdenum and chloride). Sodium and potassium also have recommended levels, but they are treated separately. However, this does not exhaust the list of elements that you need. Sulfur is not usually mentioned as a dietary supplement because the body gets plenty of it in proteins. And there are several other elements — such as silicon, boron, nickel, vanadium and lead — that may play a biological role but are not classified as essential.

conclusion

These chemicals or compound can be checked periodically and can identify the people using this data. Research can be made in this wide area and can conclude that no research is made on this concept so in future it will be useful.It can also be used for secure banking ,investing and finanacial , transaction ,health and social services.

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