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The Missing Blood Lipid Excretory System

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Abstract

In modern science, people are trained to study and decompose objects to its deepest level. Very often people focus on the details so hard that they forget to step back and look at things from a holistic point of view. For instance, health problems like cardiovascular disease, hypertension, cancer, skin disease, and even aging, to name just a few, are considered to have independent root of causes and are treated by "specialists". This article offers an alternative perspective that these problems-in fact all diseases except trauma and infectious conditions-are mainly caused by one single factor-malfunction of the blood lipid excretory system.

Keywords: Cardiovascular disease; Hypertension; Cancer; Skin disease

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Introduction

In the modern scientific practices, people usually tend to complicate simple problems, and try to solve these complicated problems with even more complicated methods. That is what we call pseudoscience. For instance, many of the mainstream physiological theories about human skin are incorrect, despite the numerous amounts of anatomic studies done in the area. This article is meant to discuss some of the problematic theories:

1. Sebum is excessive blood lipids that do great harm to human health.
2. Sebaceous gland is not a "gland" and has no capability to produce sebum due to lack of connection with blood vessels.
3. Sebaceous gland exists only near head hairs, and cannot be found near any body hair.
4. Arrector pili muscle is not "useless body part". It plays an important role in the process of blood lipid excretion.
5. Important functions of hair and hair follicle are missing in modern physiology.
6. "Hair growth cycle" is an invalid theory. Healthy hairs do not fall out.
7. The theory about what causes androgenetic alopecia has no scientific basis.
8. Current understanding of structure and function of sweat gland is incomplete.
9. Like sebum, the horny layer is not beneficial but harmful to health.

To be clear, excessive blood lipids refer to the excess amount of blood lipids that should be cleaned from the body *via* the excretory system to maintain physiological health.

Please be noted that the term "sebaceous gland" will be replaced with "blood lipid vesicle", and "sebum" with "excessive blood lipids" in the rest of the article, to correctly describe their roles in the physiological and pathological contexts. The only exception is when they are descripted in the mainstream theories.

A major problem in the Western Medicine is the over specialization of knowledge domain. Highly specialized doctors are drilled in one area so deeply that they either overlook or complicate simple problems and lose the capability of looking at the whole picture when analyzing physiological and pathological phenomena. Moreover, the dominant Western medical idea that anything secreted by human body must have some kinds of physiological functions often becomes the blind spot that leads to many false conclusions in the physiological and pathological studies. The most serious blind spot is the lack of understanding of how human body balances out the excessive and the recognition that the abnormality of the process is the root cause of nearly all diseases including aging (except trauma and infectious diseases).

For instance, the studies of hyperlipoidemia are traditionally separated from researches of other diseases while in fact the excessiveness of blood lipids is highly related to hypertension and all kinds of cardiovascular diseases.

The excessiveness of blood lipids is also the root cause of many other diseases whose causes are wrongly identified as obesity. In fact, obesity is not a cause of diseases but a symptom occurs early in disease development, followed by other conditions caused by abnormality of balancing of blood lipid as the diseases evolve. Technically speaking, it is incorrect to state that obesity "causes" these diseases.

What is excessive blood lipid excretory system?

Blood lipid (fat in blood) is substance transformed from animal and vegetable fats, sugar and starch in foods. It provides energy and building materials necessary for organs and cells to maintain health. However, most people intake fat more than necessary, and if someone's body fails to excrete these excessive blood lipids efficiently, all kinds of diseases may occur as direct or indirect consequences.

Human body is designed with built-in excretory systems to remove physiological wastes, including excessive blood lipids. Having everything else being equal (similar diets and health status), the effectiveness of operation of the blood lipid excretory system decides whether someone's blood lipid level is normal or not.

The blood lipid excretory system includes hair follicle, hair, arrector pili muscle, sweat gland, and blood lipid vesicle. Skin may be included in the system as well since its health condition influences the excretion of blood lipids. Intestine, on the other hand, is excluded from the discussion because intestine deals with fats in the digestive system and has nothing to do with excretion of blood lipids.

When the blood lipid excretory system runs well, the skin becomes the only organ in the system that affects the efficiency of excretion of excessive blood lipids. This article therefore focuses on explaining how skin conditions affect the excretion.

For a long period of time the Western medicine has had the incorrect idea that any substance leaving body (except faeces and urine) must possess some kind of physiological functions. It seems that simply because people cannot explain why the substance even exists in the first place and things must exist for reasons, they end up "assigning" functions for the subject matters to solve the mysteries. This is not even an "educated guess". So far the incorrectly identified items include excessive blood lipids (sebum), earwax, and stratum corneum (the horny layer of skin).

Although the Western Medicine is proud of prolonging human life span, it actually is still at its early stage of studying human physiology, as functions of many organs are either ignored or wrongly interpreted. For example, the functions of the elements in the integumentary system, including hair, hair follicle, arrector pili muscle, and sebaceous gland (blood lipid vesicle), are totally ignored. In fact, these organs should be classified under what we call the "Blood Lipid Excretory System" because what they are really doing is to work together to remove excessive fats in blood vessels. To add the Blood Lipid Excretory System in the current structure of modern physiology will face doubts and challenges, yet this discovery is indeed based on solid physiological and pathological evidences, as described below.

Most physiologists think that sebum is produced from sebaceous gland and must have some functions such as offering protection to skin. As strange as it is, even though no evidence has yet been found to support this viewpoint, people still accept it as it is, without any questions on exactly how sebaceous glands produce sebum. One of the few relevant reports on the topic is a research from The Howard Hughes Medical Institute (HHMI), stating that "only a small portion of sebaceous gland cells near hair shaft produces sebum." This is an astonishing and discouraging conclusion.

First, it is a physiological common sense that nothing could be secreted without source supply. Since the sebaceous glands are not connected with blood vessels (as shown in all popular skin anatomical charts), they are unable to produce anything. In fact, sebum is a form of excessive blood lipids in capillaries being separated from the rest of the blood by hair follicles (the similar principle as the kidney dialysis). When arrector pili muscle contracts, the lipids along the wall of hair follicle get squeezed and flow along hair shaft to blood lipid vesicle (sebaceous gland) for storage. The direction hair scales grow builds a one-way passage to ensure lipids do not flow back to hair follicle.

Due to their thinness scales can carry only a few amounts of lipid at a time, thus only a small amount of "sebum" (lipid) can be found near the "sebaceous gland" close to hair shaft, which unfortunately is interpreted as "sebaceous gland produces sebum"-very rough observation and analysis leading to a very bold and absurd report.

Anatomy of the Skin

As far as the function of arrector pili muscle is concerned, one source on Wikipedia states that "*Pressure exerted by the muscle may cause sebum to be forced along the hair follicle towards the surface, protecting the hair*" [1]. Apparently the author also observes that "sebum" is not generated from "sebaceous gland" but hair follicle (Due to the one-way passage structure of hair scales, no "sebum" could flow backwards. So, if "sebum" was produced around the sebaceous gland area, no "sebum" would ever be found near the hair follicle).

Secondly, the fact that "sebum" is also observed at locations where no sebaceous glands exist-such as palm, sole, areas where body hairs grow-again proves that sebum is not produced from sebaceous gland **(Figure 1)**.

As mentioned above, "sebum" is the excessive blood lipid that needs to be get rid of. The following explains how the Blood Lipid Excretory System works:

The main job of hair follicle is to separate lipids from blood, functioning like kidney; hairs and pores function like urethral

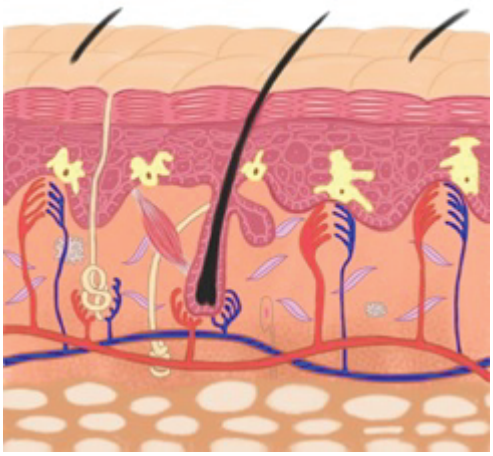

Figure 1 Anatomy of the skin.

canal, and the scales on hair shafts ensure single-direction flow of lipids. The density of blood lipids makes it too hard for any single set of organs to take on the separation and excretion alone, so the workload is distributed to the millions of hair follicles and sweat glands of human body. Hair follicle alone cannot generate sufficient pressure to push lipids out of the follicle, so arrector pili muscle is involved and pumps up lipid along hair shaft. The slow, repetitive movements of contraction and relaxation force lipids to travel along the hair shaft and either go to the final destination (pores) or to a temporary warehouse (blood lipid vesicle), depending on where this excretion occurs.

On torso, arms and legs-where no blood lipid vesicle exists, lipids are delivered to pores. On scalp, lipids are delivered to blood lipid vesicles, and get pushed out of vesicles by external pressure and travel along hair shafts to pores. (External pressure occurs when people comb hair, wash hair, do scalp massage, lie on bed, etc.). In addition to its main role as a pump, arrector pili muscle serves a secondary function of helping maintaining sanitation for the system: it makes hairs wave slowly to both prevent adhesion to skin surface and remove wastes accumulated around the sweat pores. This sweeping mechanism is particularly important to body hairs that cannot grow long.

Like heartbeats, stomach muscle contractions, and motile cilia waves found in lungs, the arrector pili muscles work 24 hrs a day. Because these muscles spread widely over the body and contract slowly and mildly, the movements are unnoticeable to normal people. Moreover, the muscles do not work in coordination (they contract independently and randomly), making the muscle movements hard to be identified in medical examinations. For instance, among the noises that are captured in the EEG and EMG measures and interpreted as electromagnetic interferences from the environment, most of them are actually electrical signals generated by these muscles. The noises prove that the arrector pili muscles contract constantly, and they do so to excrete excessive blood lipid.

Among the members of the system, blood lipid vesicle is perhaps the most creative and amazing design of all. It provides noticeable signals to warn us about abnormality of blood lipid balance so that we can take actions in a timely manner. When lipids enter a hair vesicle at a speed faster than they leave, the vesicle will be swollen and create a strong opposing pressure that will cause lipids formed later to be stuck at the follicle area, leading to cut-off of nutrition supply to the follicle area due to capillary blockage and eventually resulting in hair follicle atrophy and hair shedding.

The following observations prove that lipids in blood lipid vesicles are squeezed to the skin surface of scalp by external force:

1. Usually after two to three days one's pillow becomes greasy. It is caused by the excessive blood lipids that get squeezed out on scalp.

2. Hippocratic wreath refers to a common type of male-pattern hair loss that baldness occurs around the top while hair at the sides and rear of the head remains. Some doctors explain the remaining hairs by stating that these areas do not have androgenic hormone receptors and thus do not get affected by DHT-this assumption has no theoretical basis at all. In fact, hairs remain because lipids in blood lipid vesicles can be successfully squeezed out as one's back of head presses against his pillow, thereby excretion of lipids goes well. In contrast, lipids on the top of scalp cannot be excreted efficiently because no one sleeps with his top of head against pillows. Insufficient external pressure causes hair follicles to be clogged first then "get stroke"; once hair follicles atrophy hair loss occurs **(Figures 2 and 3)**.

3. Dr. Manolis Kallistratos, a Greek cardiologist, presented his research regarding the relationship between midday naps and blood pressure at the European Society of Cardiology Conference on Aug 29, 2015. He claimed that a one-hour nap in the afternoon helped lower blood pressure levels and reduce risk of stroke. He emphasized, however, that the observation was backed up with statistical data but had no theoretical support.

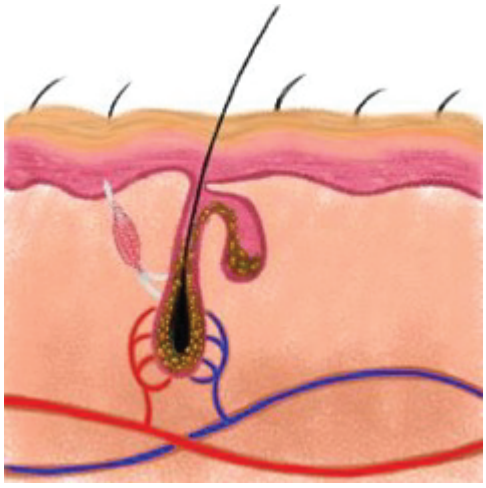

Figure 2 Excessive blood lipid is filtered into hair follicle.

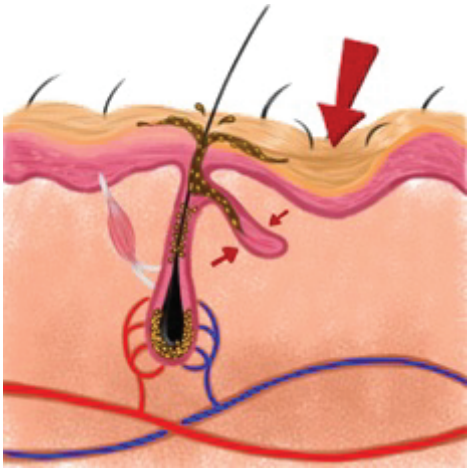

Figure 3 Blood lipid stored in blood lipid vesicle is squeezed out of pore by external force

In fact, Dr. Kallistratos' observation and the phenomenon of Hippocratic wreath are two sides of the same coin. To make this kind of midday nap work, two requirements must be met: one must lie down during the nap and there must be a long time interval between the nap and the night sleep beforehand. In other words, taking a nap in seating position or getting up in late morning and then taking a nap soon afterwards will not do the trick.

It is speculated that Dr. Kallistratos did not measure the changes of level of blood lipids of the patients during his research when he measured their blood pressures, otherwise he would probably have figured out why a nap could lower blood pressure. When one gets up in the morning, his blood lipid vesicles are cleaned due to old lipids being squeezed out already during his sleep at previous night. Then blood pressure increases gradually as new blood lipids are created throughout the morning. A nap in the afternoon helps clean blood lipids once again and bring down blood pressure, eventually lowering the risk of stroke.

Both Hippocratic wreath and Dr. Kallistratos' findings validate the functions of the members of the blood lipid excretory system: hair follicle is the blood lipid separator, arrector pili muscle is the pump, hair shaft is the pipe that delivers excessive blood lipids through its scale-like structure (squama) in a single direction, and blood lipid vesicle serves as an alarm by blocking the blood supply to the hair follicle. Unfortunately none of any existent medical theories identifies the functions of the organs correctly, thereby it is not surprising that no efficient means for prevention and treatment on baldness has yet been developed in the mainstream medical field.

The urgent need to acknowledge the negative impact of excessive blood lipids to health. In the modern textbooks of physiology, harmful excessive blood lipid is interpreted as sebum providing protection to skin and hair. This misjudgment blindfolds scientists and researches and prevents them from learning the human blood lipid balance mechanism. This ignorance then leads to the wrong interpretations of hair growth and loss that pave the way to the nonsensical baldness treatments that have disappointed countless patients. Moreover, it is a fatal blindspot for illness prevention and treatment to overlook the connections between blockage in pores (and sweat pores) and various kinds of complications including cancers. The ignorance of the impact of excessive blood lipid to heath is indeed a serious problem in the medical field.

Earwax is one example of how harmful objects are identified as beneficial in the Western Medicine. In the Han Medicine, earwax is viewed as pure physiological waste, but it is described as such on Wikipedia "*Earwax, also known as cerumen /səˈruːmɛn/, is a yellowish waxy substance secreted in the ear canal of humans and other mammals. It protects the skin of the human ear canal, assists in cleaning and lubrication, and also provides some protection from bacteria, fungi, insects and water*"[2].

This statement is self-contradictory; we know from many medical treatment records that people do have problems with water, insects, and fungi getting into ear canals. To fully defend oneself from these invaders, one would need lots of earwax to fully block his ear canals and thus unavoidably hinder hearing-which needless to say violates any physiological common sense. Moreover, if earwax is designed to have certain functions, it should not be produced in different types (wet-type versus dry-type).

Earwax, therefore, is nothing but a mixed substance of pieces of horny layer and excessive blood lipids excreted in the ear canal. The different types reflect the difference of physiological traits of individuals. It is observed that people with wet-type earwax usually have higher measures of blood pressure than those with dry-type (The former typically have bromhidrosis as well).

All in all, the production of earwax proves that human body is designed to excrete blood lipids through pores and sweat pores as part of its self-regulating mechanism for balancing blood lipids. Modern physiological theories about human excretory systems remain blank for excessive blood lipid and fat soluble wastes. The excessive blood lipid excretory system includes hair follicle, hair, arrector pili muscle, blood lipid vesicle, and sweat gland. Excessive blood lipids are excreted in three ways. One is a kind of indirect excretion occurring on scalp. Each head hair is attached with a blood lipid vesicle, and external forces are required to squeeze the lipids out of the vesicle.

The second kind of excretion happens around the mandible area where no blood lipid vesicle exists and capillaries are usually larger. Fast growth of facial hair and the larger size of capillaries efficiently generate pressure sufficient to squeeze out lipids directly without vesicles.

The final kind of excretion takes place with body hairs that do not come with blood lipid vesicles either. Lipids in capillaries are separated by hair follicles, mixed with other substance in the sweating process, and finally get excreted from sweat pores.

The true cause of baldness and the fallacy of hair growth cycle

When health status is at risk, our bodies send out warning signals such as pain, fever, dizziness, vomit, sweating, skin color change, to name just a few. Hair loss is also one kind of warning, an indicator for unhealthy high level of blood lipids.

Although not knowing the exact health risks associated with baldness, people who grow bald still feel great fear; the stress, panic, and dismal may cause low self-esteem and even attempts of suicide. The consequences are so severe and 5,000 years have passed since the ancient Egyptians began the efforts to fight against baldness, yet not a single theory has been able to explain correctly the physiological functionality of hair. It is a great misfortune for the entire medical community.

Unlike the hairs of other mammals, the head hairs and facial hairs of human can grow long during the entire life span. They grow to continuously remove excessive blood lipids from human body. In addition, head hair loss serves as a physiological warning signal when the blood lipid level is overly high. Unfortunately, the functions of hairs have long been ignored by the Western medicine community, leaving many diseases that could have been prevented or cured remained unsolved. In spite of all the diligent efforts of finding solutions for hair loss, it is strange that no one has ever asked why and how hair is needed by human beings in the first place. No wonder all the efforts go in vain. Hair transplant is an example of such wasted efforts. For people who grow bald in adulthood (versus baldness occurring in infanthood or childhood that are typically caused by rare diseases), hairs growing from transplanted follicles eventually will fall out if factors causing baldness remain unidentified.

Medical practitioners believe that hair follicles growing in the "safe donor zone" do not contain androgenic hormone receptors, thus transplanting these "healthy" follicles to the bald areas could solve the problems. Unfortunately evidences show that patients still suffer hair loss after such treatments, because, in fact, falling of hairs-except facial and chest hairs-has nothing to do with any androgenic hormones. Androgenic hormone encourages blood lipid excretion and discourages body fat deposition. If a male has significantly higher level of female sex hormone than androgenic hormone in his body, a series of physiological changes will occur to store more body fat: firstly arrector pili muscles attached to facial and chest hairs stop working, hair follicles atrophy, facial and chest hairs fall out, blood lipid excretion in these areas stops, and finally blood lipids are transformed to body fat.

Many hair loss solutions on the market contain female sex hormones as active ingredients; these products can mitigate hair loss at the best but are unlikely to revitalize hair follicles and rejuvenate hair growth. Because neither the medical professionals nor the manufacturers could point out what makes the products work, finally someone has come up with the idea that female sex hormones can neutralize androgenic hormone and thus reduce hair loss.

The reality is, however, that female sex hormones encourage body fat storage. As more blood lipids are transformed to body fat, less are remained in blood vessels to clog hair follicles. And no hair follicle atrophy means no hair loss. That being said, products containing female sex hormones have detrimental side effects including cancers and feminization of men.

There are about 120,000 head hairs and more than 1,000,000 body hairs on human skin surface. If the mainstream medical explanations about hairs and related organs were correct, human being would have more than 1 million useless hair follicles, hairs and arrector pili muscles and 120 thousand misinterpreted spacious glands. Why has no one ever challenged the reasoning that human beings are born with such large quantity of useless organs?

Furthermore, there is a well-known theory about hair growth cycle that obviously violates the common sense of average persons. According to the theory, human hair grows about 1.2 cm per month and the longest life span of a hair strand is about 8 years. In other words, it is unlikely for hair to grow more than 120 cm. In reality, however, lots of people have hair grow longer than that. Asha Mandela, the winner of the Guinness World Record for "World's Longest Dreadlocks" in 2013, had her hair measured to be 55 feet, 7 inches, [3] equivalent to 1694 cm, which is 14 times longer than the maximal length of human hair according to the theory.

Real examples of individuals with long hair can be found easily in daily life, and the math required to prove or disapprove the theory is not difficult for even a sixth-grade student. How come none of the well-educated dermatologists have a glance at the facts and simply accept the doctrine without questioning?

Since the facial hairs share similar structures with the head hairs and both grow on the most noticeable areas of human body, why don't the facial hairs play the role of signaler as the head hairs do? First, the blood lipid vesicle presents only on scalp, and it is the key factor that causes pressure for hair loss. Secondly, the skin of the scalp has thinner corium layer and is reached by smaller capillaries, making head hairs grow slower than the facial hair.

The slowness of hair growth speed, combined with the smallness of capillaries, makes it easy for head hair follicles to get clogged and atrophy. The consequent noticeable hair loss is supposed to provoke a sense of danger at our subconscious level, asking us to pay attention to the abnormality of blood lipid level. Unfortunately we receive the signal but fail to decode it correctly.

Nearly all medical researches regarding hair growth cycle and baldness universally ignore three things: the connection between blood lipid and hair follicle, the influence of local diets to baldness, and the importance of looking at the problem from a long-term perspective. 50 years ago baldness was more common in the Western cultural regions, but its prevalence in Asia started to catch up in the subsequent years. In China, on average, abnormal hair loss starts at the age of 13, and more females start to experience baldness compared with decades ago. The changes that have been observed over time make it clear that associating baldness to genetic heritage or male hormones is unreasonable.

In fact people suffering from baldness have at least two things in common. First, they consume high-fat foods especially the salad oils. Secondly, they use synthetic hygiene products such as commercial soaps, body washes, shampoos, and dimethicone conditioners. These products not only fail to clean the stratum corneum but also foster blockages in pores and aggravate the prevalence of baldness as a result.

Plant oils that have undergone extraction-not the cold-processed kinds but the ones that have all nutrients taken away, such as soybean salad oils-are invisible killer for causing baldness. One can do this small test: wash hands with detergents, and one may find that even animal oils are easier to remove than plant oils. This is because this kind of plant oils has a much higher density and viscosity in human body and is harder to be excreted. Blood lipid transformed from this kind of plant oil is harder to be excreted and typically becomes the major cause of high level of blood lipids and baldness. According to the official statistics published by Chinese government in 2011, 80% of monks and nuns had hyperlipidemia-an unimaginable ratio in the 1990s.

In Japan, people started to consume soybean salad oil in 1933. In 5 years these people began to experience lots of abnormal hair loss. Same thing happened in Taiwan: the products entered the market in 1966, and population with excessive hair shedding was increased noticeably around 5 years later. In China, less than 40% of men had baldness before 1984. Salad oil became popular since 1985; now more than 80% of men has baldness, and baldness has become more prevalent among female in China than in Taiwan and Japan. Although overconsumption of high-fat food is the main cause, the destructiveness of sticky plant oil cannot be ignored. The stickiness of these oils becomes more prominent during the process of frying and stir-frying (the two very common Chinese cooking styles), and once getting into human body the oils become a kind of stubborn blood lipid that can't be cleaned easily.

The fact that the scalp is usually observed to be excessively oily during the initial stage of abnormal hair loss indicates that hair loss is highly related to high level of lipids. Patients diagnosed with cardiovascular diseases have abnormal hair loss sooner or later, and all patients suffering ischemic stroke are bald. In other words, hair loss is the warning sign of high level of blood lipids and cardiovascular diseases.

If one intakes excessive amount of fats and for some reason there is no sufficient pressure on the scalp, blood lipid vesicles will be full of lipids and hair follicles will be choked as well, then blood flow towards the follicles will stop. Without blood supply the hair follicles will atrophy and hair shedding will occur.

Once a hair falls out, lipids accumulated in the entire cavity immediately flows out through the pore and the whole area is cleaned again. As blood supply resumes, the hair follicle is rejuvenated and a new hair grows. In sum, the "hair growth cycle" is not a fixed cycle but a dynamic, self-regulating mechanism triggered by changes of amount of blood lipids in the human body to retrieve balance of lipids. The current theory about the

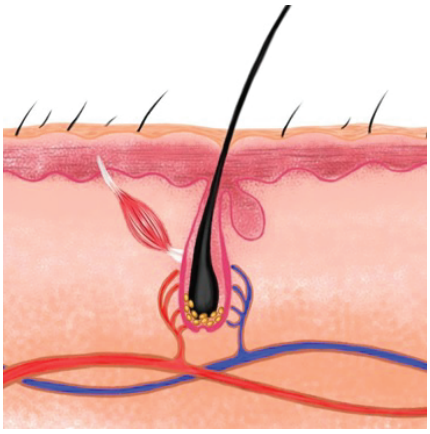

Figure 4 Excessive blood lipid leaves capillaries and enters hair follicle through a filtering process.

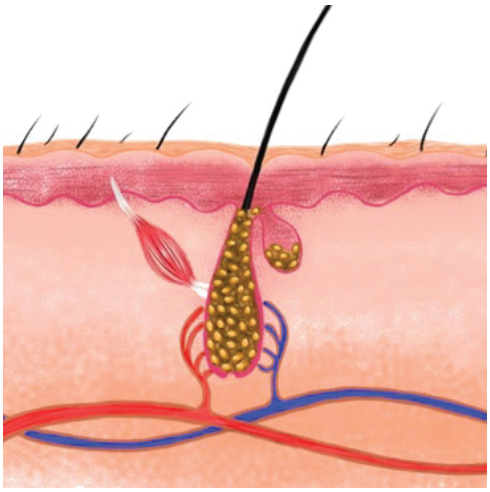

Figure 5 Lipid in hair follicle is pushed to blood lipid vesicle via contraction of arrector pili muscle and hair scales.

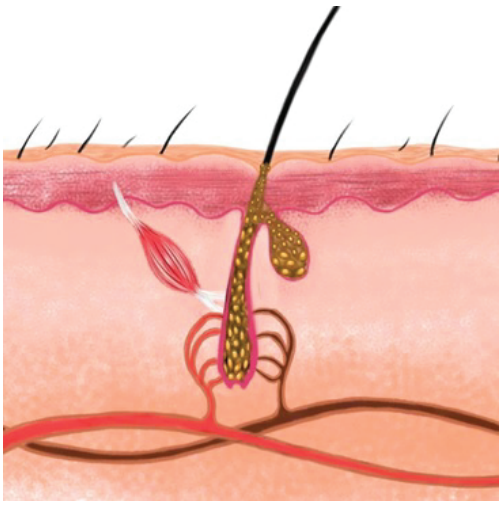

Figure 6 If blood lipid vesicle reaches its storage capacity, the vesicle will be swollen and create an opposing pressure that causes lipids formed later to be stuck in the follicle. Blood supply to the area is cut off as a result and leads to hair follicle atrophy.

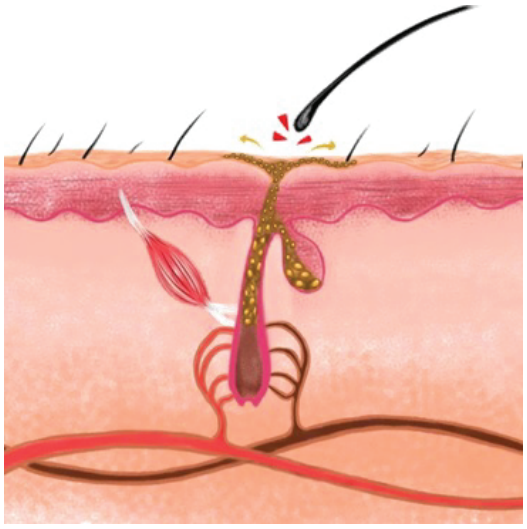

Figure 7 After hair follicle atrophies and hair falls, lipids stocked in hair follicle and blood lipid vesicle leaves body.

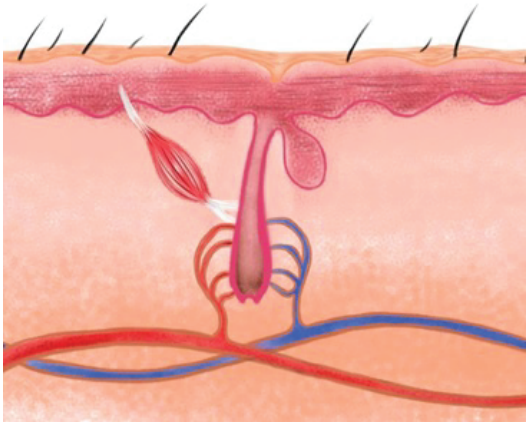

Figure 8 Blood supply to hair follicle begins again.

"cycle" is a misjudgment due to insufficient observation and analysis **(Figures 3-9)**.

Most problems of baldness are related to blood lipids, but alopecia areata (spot baldness) and baldness caused by chemotherapy are exceptions; they usually do not come with oily scalp, meaning no large amount of lipids is excreted (As a side note, at this moment the modern medicine still cannot explain what causes the severe, fast hair shedding). In fact, Alopecia areata and chemotherapy-caused baldness are consequences of malfunction of arrector pili muscles; if for some reason arrector pili muscles fail to receive signals from the nerve system, contraction of the muscles will stop. Without the aid of the pump, even a little bit of blood lipid can clog a hair follicle and leads to "stroke" of the follicle, which then atrophies and the attached hair will fall. However, as soon as signals can be delivered to the arrector pili muscles again, new hair will grow immediately.

Typical baldness is different from alopecia areata and baldness caused by chemotherapy in that, in the situation of the former, arrector pili muscles still function correctly, and new hairs grow when accumulated lipids are removed through hair loss. In the cases of the latter, blood lipids in the hair follicles cannot be moved away without contraction of the associated arrector pili muscles, thus blood supply cannot restart and new hairs cannot grow, unless the arrector pili muscles start working again.

Physiological impacts of excessive blood lipids

To respond to consumer needs, nearly every cosmetic manufacturer provides products for oil control. These products either shrink pores temporarily or fill pores with substance to obstruct the oil excretion on the face. These incorrect methods do not help but damage physiological health instead; the products, if used continuously, may cause overly high level of blood lipids and related health problems in the long run. To truly help customers to maintain beauty and healthy, cosmetic companies should develop products that could absorb oil/excessive blood lipids without clogging pores.

Vellus hair seems dispensable in the physiological domain, with its information rarely presented in most anatomy charts. In particular, in the tubular part of sweat gland grows a vellus hair, and this fact is missing in lots of skin anatomy charts. Physiological common sense tells us that the human body is unlikely to leave millions of hollow tubular structures with permanent openings (pores), and it is also difficult to keep sweat glands unblocked in the long run, so there must be one hair in a sweat gland to prevent closing of pores and to "sweep" the secreted substance for cleaning purpose.

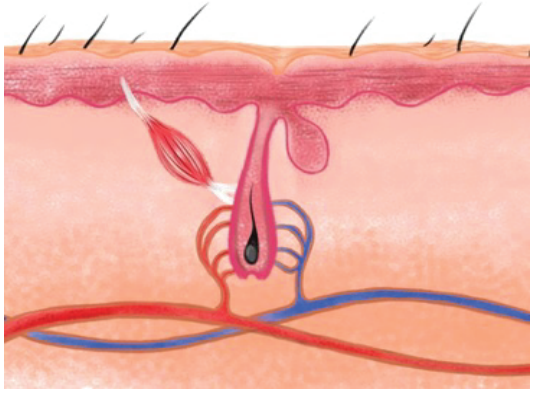

Figure 9 New hair grows after a while and the "hair growth cycle" starting in Figure 1 repeats. Capillaries near the hair follicle will be silted with lipids more and more as the cycle repeats, leading to narrower capillaries, unhealthier hair follicle, and thinner hair. Finally, as the capillaries are fully clogged, permanent baldness occurs.

The sweat glands secrete a mixed substance of sweat and lipid, such as those found on human forehead, nose, and sides of nose. Attached to the sweat gland is vellus hair, which is almost identical to other types of human hair with respect to structure, with the minor differences in appearance (i.e. thinner, shorter, and slight-colored) and the missing of blood lipid vesicle.

Like other types of hairs, vellus hairs also get supports from arrector pili muscles-the muscles pull hair follicles to make hairs wave, and the waves help to prevent adhesion between hair and wall of sweat gland and to clean garbage in the tube so that excretion of sweat remains unimpeded.

If blockages in pores are removed regularly (e.g. by using Evolia Soap which cleans horny layer effectively) and blood lipid vesicles are pressed timely (through combing, massage, etc.) to keep hair follicles healthy, no hair loss will occur, and atrophy of hair follicles in the bald areas can be reversed to grow new hair.

As of now we have had 50 balding patients trying the Evolia soap and all of them have grown new hair in two to three weeks. Compared with the old hair, the new hair grew at a speed 30%-50% faster, appeared thicker, softer, healthier, and moister (i.e. more hydrophilic). The physiological impacts of high level of blood lipids are not limited to baldness. According to the statistics offered by the World Health Organization, compare to average people, those who have psoriasis are 32% more likely to develop cardiovascular diseases, 61% for hyperlipidemia, 127% for fatty liver diseases, and 110% for myocardial infarction. In fact, high level of blood lipids is the factor causing all of the diseases.

Psoriasis is an autoimmune disease of having immune system attacking healthy skin cells. Theoretically speaking, it causes abnormal multiplication of skin cells but no more harms. In reality, however, abnormal proliferation of stratum corneum worsens blockages in pores (hair pores and sweat pores), causing cumulation of lipids, sweat, and other physiological waste on skin surface, creating a suitable environment for bacteria and development of dermatitis, which in turn obstructs blood lipid excretion further. As the blood lipids in blood vessels cumulate gradually, hyperlipidemia will develop first, followed by fatty organ, vascular sclerosis, hypertension, various kinds of strokes, and eventually myocardial infarction will occur.

It is not that difficult to find the connections between psoriasis and the diseases by observing the physiological conditions of patients with psoriasis. Unfortunately, since people are unaware of the excessive blood lipid excretory system, they are not able to find the real cause of stroke.

Influence of stratum corneum to the blood lipid excretory system

Blockage in pores and sweat glands causes slowness of metabolism of skin related organs. It also contributes to medical problems associated with blood lipid, skin tissues, joint, aging, cancers, and other chronic diseases. Unfortunately, the medical community has not yet been aware of the seriousness of blockage in pores and sweat glands, causing many simple problems remain unresolved despite of the tremendous amount of time and money spent on finding solutions-a sad wasting of social and medical resources.

To discuss the blockage in pores and sweat glands we need to talk about the horny layer and excessive blood lipids (sebum) first. These two often raise arguments in the physiological field. Some state they can protect human body, while others claim they are simply insignificant biological waste. We say neither is correct-the dead skin cells and excessive blood lipids are harmful elements that should be removed from body thoroughly.

The dead skin cells composing the horny layer are something that should, but fail to, leave body yet has been glorified as something protective. Because the medical and skin care practitioners fail to clean the horny layer and the bacteria hide within, they need a reason to justify the existence of the substances. Finally they come up with the idea that the dead cells and some skin bacteria are beneficial to health. In fact, whether categorized as “good” or “bad”, all bacterial species cause diseases (including aging) directly or indirectly **(Figure 10)**.

So why cannot dead skin cells leave body naturally if they should? Physiological evidence suggests that, in areas with high temperature and humidity, there are approximately 1000 billion bacteria (up to 1000 species and 19 categories) living on surface of the human body, with most staying in the horny layer and some layers beneath it in the epidermis layers. Many research papers claim certain species of skin bacteria and the human beings build a mutualistic relationship. This kind of viewpoint is popular because since people in the medical field are incapable of reproducing the “benefits” (protecting the skin), they choose to ignore the harms and glorify the bacteria. It is the same rationale that drug takers use to justify their using of drugs.

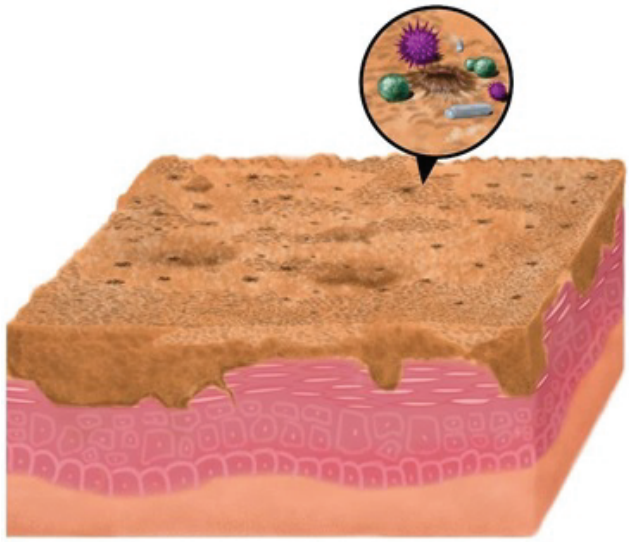

Figure 10 Dead skin cells fail to leave body due to tight grasp from bacteria.

Typically there are 1 trillion bacteria spreading on two square meters of the skin for an average person, equivalent to 50 million bacteria on every square centimeter of the skin. And every single bacterium grasps a piece of skin. Being attached to such large amount of bacteria, most dead skin cells cannot leave body as they should. Thus it is like everyone is wearing wetsuit, socks, gloves, hat, and mask weaved with bacteria and pieces of the horny layer-the coverage excels any products from the textile industry.

In the so-called "mutualistic" system, skin surface is a great living environment for bacteria; the "net" weaved with bacteria and horny layer cells blocks the excretion of sweat, blood lipids, and other wastes, causing diseases one way or another.

In the ideal situation, a skin cell finishes its physiological mission once it reaches the end of its life cycle and is meant to leave human body as other physiological wastes do. However, with no defensibility but full of water, protein, and fat, a dead skin cell becomes the best nutrition for bacteria. It thus cannot detach itself from the body as it should due to firm grasp of the massive amount of bacteria around it. The phenomena cause the observed "15-20 layers" in the stratum corneum layer.

The quantity of shedding of dead skin cells may vary based on physiological conditions of individuals, where the shedding occurs on body, and living environments. Because of the changes of the factors in daily life, the horny layer is not a thick, flat "wall" as many people think to provide protection. Instead, under microscope, cells composing the layer look rough and irregular in size, shape and thickness, with pieces coming off all the time. How can a decayed door that may fall down anytime defend the house against invaders?

Furthermore, stratum corneum is only 10-40 μm thick; the thickest layer is less than half the thickness of a piece of 70g paper. Finally, the horny layer is composed of a bunch of protein without bioactivities. It is like covering ourselves with a thin, vulnerable layer of bean curd or eggshell membrane and believing it to be a protective shield.

Living environments affect the amount of shedding of dead skin cells. A person living in a dry climate, if no moisture is applied, will experience more shedding than if she lives in a humid area. As dryness inhibits bacteria propagation, dead skin cells shed more easily but also unequally. The unsymmetrical shedding pattern causes roughness, cracking, and even bleeding of skin, so people apply moisturizers to mitigate the conditions. Unfortunately doing so encourages bacteria propagation which then obstructs normal shedding. In any case no protective functions provided by dead cells are present. The statement that "stratum corneum provides protective functions" is a lie.

In a dry environment, the horny layer will shrink due to lack of water in the tissues, and shrinkage creates pulling forces. Because size and thickness of pieces of horny layer vary from section to section, uneven pulling forces (caused by each section pulling the skin tissues underneath towards different directions and with different intensity) cause tearing of skin. If the tear is minor (usually occurs at the epidermis level), no bleeding will occur but discomfort of wound itching may occur during the healing process.

This type of healing itch used to occur more often in fall and winter or with dry climate. Over the last 20 years though, it has begun to appear in summer as well. Popularity of air conditioning is the one to be blamed. Air conditioning increases dryness of indoor environments and worsen the shrinkage of horny layer.

If the horny layer shrinks more forcefully and tears skin tissues all the way to the dermis layer, bleeding and inflammation occur and atopic dermatitis is formed. This skin problem also used to happen in fall and winter but now it occurs in summer as well. Moreover, the average age of sufferers is decreasing. The upward trend is mainly caused by abuse of air conditioning, along with exposure to harmful chemicals of skin care products like body wash, shampoo, moisturizer, etc. In sum, if the horny layer is cleaned thoroughly and safely on a daily basis, all conditions associated with skin shrinkage, winter itch, or atopic dermatitis can be prevented effectively.

Bacteria's breaking down of protein (dead skin cells) causes bad odor and yellowing coloring in the fermentation process. A combination of such residues and certain types of fat causes bromhidrosis. Besides, the irregular surface of horny layer is full of "potholes" that aid the cumulation of dust, oil, and carbon compounds. The mixture makes skin look and feel rough and dull, leading to cosmetic skin blemish.

Dermatophytosis, also known as ringworm, is the most challenging skin diseases for permanent cure, with tinea pedis being the hardest. Fungi move around in the horny layer as they proliferate; some hide themselves in the deep areas that medicines can barely reach. Moreover, many patients tend to stop treatment when conditions disappear, allowing the survivals to multiply again afterwards. How about if the horny layer is totally removed? There will be no place for fungi to grow and dermatophytosis will disappear by itself.

Both heat rash and eczema are small pockets of sweat developed when pores are blocked (by bacteria and dead skin cells) and sweat cannot escape. If sweat pores constantly remain cleaned to support normal sweating no associated symptoms would occur.

Sweating is the mechanism to regulate body temperature. Failure to cool down causes heat exhaustion and may progress to heat stroke if no intervention is made. Furthermore, if sweat pores are blocked chronically, sweat that cannot escape will permeate into joints to form rheumatism and arthritis. Because the problems are caused by excessive sweat infusing into joints, seniors living in humid places commonly suffer rheumatoid arthritis.

Gout is another case of blockage in sweat pores. Sufferers usually experience pains shortly after eating foods containing purine. With sweat glands being blocked, urate crystals can go nowhere but settle in the tissues of the joints and cause pains.

Blockage in pores (hair pores and sweat pores) causes tremendous harm to human body, including cardiovascular

diseases and baldness. In the last 20 years, more and more people are getting hypertension or cardiovascular problems. The mainstream medicine professionals have very limited means in their toolboxes; patients are asked to take medicines with side effects for a life time. As for baldness, no one seems to study the connections between baldness and blood lipid, thereby leaving the real cure unknown.

Some people may question if sweat glands and pores can really be blocked by bacteria and residues of the horny layer. After all, people still sweat and excrete physiological wastes even though they only shower once a year. If you have ever observed the drain hole of your bathtub, you may find that it takes as little as 50 hair strands to make the draining noticeably slow down.

In the same way, if pores are not cleaned regularly, the speed of sweat and lipid excretion will drop to 20% or below, and down even further if the wastes passing through are larger than usual. On the contrary, an infant has not yet had layers of dead skin cells to block the pores, therefore he typically has sweat excreted rapidly and largely.

Many people promote the ideas of reducing bathing and showering and even stopping the activities at all. Regardless the argument on the impact to the environment, all advocators believe reduction of the activities do no cause harms to health-no one has ever died from being too dirty, right?

If bathing and showering were nonessential for maintaining health, animals would not have the habit of cleaning themselves in dust, mud, water, and there would be some cultures on the earth with which people never take care of personal hygiene. The reality, however, is that all animals, including human beings, universally take bath in one way or another to remove cumulation of horny layer and lipids on the skin surface.

Excretion of lipid and production of horny layer happen 24 hrs a day, thereby the more frequent the cleaning, the better the health and prevention of aging.

In 2015, some news media shared a story of an engineer named Dave Whitlock who claimed he hadn't showered in 12 years [4-6]. According to the articles, he got inspired from horses' habits of rolling in mud and invented a kind of mist containing live bacteria that he sprayed on his skin daily to maintain health, and only took an occasional sponge bath to clean the grime off of his skin (Dave Whitlock of MIT and Cambridge doesn't shower and instead sprays live bacteria on his skin, 2015).

This man apparently had neither understanding of human physiology nor adequate observation abilities. He actually wiped horny layer and lipid off skin with sponge (i.e. the main purpose of bathing/showering) and yet claimed he had not showered.

The walls of pores and sweat pores have cumulation of dead skin cells and proliferation of bacteria, narrowing the passage for lipid excretion. As the bacteria and cells tangle together and create a "fish net" at the pore openings, only small particles of water and lipids could pass through, leaving larger forms of lipids and waste retained within-the working principle is similar to the dialysis effect. To solve the problem, people invented steam bath 2000 years ago. With the high temperature and humidity, skin is softened, pores are enlarged, and blood flow, blood pressure, and sweating are all strengthened to help push large forms of wastes out of body through pores. Although steam bath cannot provide lasting aids for cleaning and is not suitable for patients with serious illness, it is still a good way for others to help excrete physiological wastes more efficiently.

As mentioned above, the bath alone does not deliver the best long-lasting result of cleaning the skin, because it is incapable of breaking the bonding between the horny layer and bacteria-the "fish net". When combined with a cleaner that can destroy the bonding (e.g. Evolia Soap), however, a steam bath becomes much more efficient in terms of removing the "fish net". Consequently, sweat, lipids, and other wastes can be excreted smoothly at any time, and many chronic diseases can be prevented effectively.

That being said, steam bath may not be affordable to everyone. A better/cheaper solution is to use the normal bathtub that is available in most households. Fill the bathtub with cold water first, then warm and hot water to slowly increase the temperature in an incremental manner, and use a cleaner that removes horny layer efficiently. If people do this at least once a week, they may get certain benefits including cleaned sweat glands and pores, enhanced functions of blood circulation, body temperature adjustment, and metabolism, slowing-down of aging, and prevention or self-curing of many chronic diseases. Behind this method is the philosophy of the Han Medicine that the best approach to follow the idea that "prevention is better than cure" is to reduce or eliminate the root cause of many significant health problems *via* the simplest means.

If bathtub is not available, one can put his feet in a wash bowl and fill water in the manner mentioned above when taking showers. This method delivers good result as well although not as ideally as a bathing does. If physiological wastes fail to be excreted through skin, serious health problems are very likely to occur. Here is one real case of a 64-year-old diabetic patient who has suffered strokes for three times. In the first time she was hit by ischemic stroke and the left side of her body was paralyzed. Then she got subarachnoid hemorrhage for the second time; in the third time she got ischemic stroke again and paralysis at the right side of her body, along with noticeable loss of control over emotional expressions. Regaining of muscle control was evident after the medical treatments, but loss of control over emotions had not got any better since the treatments.

The patient got used to wash hair using the Evolia Soap every three days and noticed her scalp was always oily every time she washed hair. After the stroke for the last time, she changed to wash hair every day and her scalp was no longer oily. After one week of daily hair wash she retrieved more than 50% of ability to control her emotion. She also behaved calmer than before. She did not take any medicine nor did she change her diet during the trial period. She simply washed hair thoroughly every day.

The case demonstrates that as long as the excretions of physiological wastes around the head area work efficiently, blood flow toward brain will get back to normal to cure the damaged brain cells.

Folliculitis, pimple, acne, comedo, and lipoma are all caused by lipid cumulation and inflammation of skin due to blockage of dead skin cells in pores. Nearly none of the medications or skin care products on the market put the problems under control effectively because they cannot remove the horny layer completely to facilitate lipid excretion.

Our clinical trials show that no matter how serious the symptoms are, they can be relieved fairly well in 3 days as soon as the horny layer and blockage in pores are removed thoroughly.

Environmental factors for high level of blood lipids

Over the last 30 years, as economics grow, people intake much more fat, sugar, and carbohydrate than before. If the amount of fats consumed surpasses the sum of the amount used by and excreted from the bodies, fats accumulate in vessels, organs, and under the skin. And the fat in vessels (blood lipid) is also a kind of source for body fat and fatty organs. The number one factor causing excessive blood lipid is over consumption of fatty food, with blockage in pores and sweat glands being the second [7,8].

One significant environmental factor that contributes to hypertension (high level of blood lipids) is the abuse of air conditioning-the harm is absolutely no less than over consumption of fatty foods. Cold and dry air causes shrinkage of the pores that leads to insufficient excretion of lipid and sweat. Various kinds of chronic diseases then may occur as a result.

A simple test can be taken to see how cold and dry air affects lipid excerption. Before your sleep at night, wash your face thoroughly (Evolia Soap is preferred to guarantee result). The next morning you may find face fairly oily (an indication of efficient excretion process). Try to sleep with air conditioning at another night and there might be only very little or no amount of oil on your face the second day-this is the proof that air conditioning hinders excretion of excessive blood lipids and sweat significantly.

Over the years, instances of baldness and chronic diseases increase dramatically. The phenomena are highly related to the popularity of air conditioning.

Years ago I happened to have a conversation with a couple around the age of 50. They talked about their personal experience on how over exposure to air conditioning caused illness. The husband used to be a famous hair designer in a big city. For 20 years, he worked in the environment with strong air conditioning. One day he was diagnosed with an odd disease that had no known cause. He was forced to quit his job to travel to find cures. Surprisingly, the disease was gone three years afterwards for no apparent reason.

In deep retrospection, he realized the disease disappeared because he unintentionally insulated himself from air conditioning for up to three years. Finally the couple decided to give up the high income in cities and moved to the countryside. They would rather doing hair cut for students in the small town in exchange for good health [9,10].

The couple's experience is shared by lots of baldness sufferers, who typically stay in office with AC for long hours and have minimal amount of physical activities during the work. Lawyers, bankers, and doctors are the typical cases; they develop baldness mainly due to long-term exposure to air conditioning that causes shrinkage of the pores and sweat glands and eventually blocks excretion of excessive blood lipids [11,12].

Conclusion

Although the average life span of humans has increased over the years, life quality is not improved correspondently; wheelchairs and walking aids can be seen everywhere, and hospitals are filled with suffering patients. As mentioned before, many diseases are caused by incomplete personal hygiene practice. We can state with confidence that, by having the pores and sweat pores cleaned, 80% of patients can get symptoms mitigated or even eliminated, aging process postponed, and life quality improved dramatically.

The meaning of life lies not in the length of day, so the purpose of medicine is to improve life quality through removing pain and illness. The modern Western Medicine has its origin back in the 17th century, from treatments of organs to modifications of DNA, the knowledge domain seems to develop rapidly. Yet if we ask the question: What exactly has the Western medicine contributed to improve life quality, the answer becomes obscure. Most so-called "medical treatments" by nature are not to "cure" diseases but to mitigate symptoms, rendering patients more time and energy to cure themselves (i.e. self-healing). There are tons of "latest discoveries" in the field each year, yet most of them provide extremely limited and fragmented insights and unable to explain how the studied object works systematically or what happen to the large number of exceptional cases.

The Western medicine professionals are educated to think and make things super complicated to the degree that they are led nowhere but to the abstruse labyrinth. It is well known that the Nobel Prize in Physiology or Medicine usually awards "new discoveries" that were published decades ago to ensure they stand the test of time. Although the committee's holding of stringent standard is respectful, it reflects the Western medical consensus that it is normal and necessary to spend a huge amount of time, money, and efforts to make a small step forward. Wouldn't that say something about the inefficiency and impracticality of the dominant attitude of the Western medicine?

It has been the modern Western medicine's tradition to separate parts of human bodies and study each individually so that one can be "specialized" in a certain field, as though each system can work independently from the rest of the body. The professionals also have the tendency to focus on the never-ending pursuing of decomposing cells and DNA of the physiological labyrinth, and get lost in the structures and phenomena that they see.

Han Medicine, on the other hand, has walked on a totally different path from the very beginning. Testing or examining machines are not adopted for diagnosis because such measures offer only pieces of the whole picture, and it is the later that allows a Han medicine doctor to have a firm grasp of the true problems (not just symptoms) and give accurate treatment targeting the root cause.

Similarly, a Han medicine doctor would avoid overly studying and interpreting physiological phenomena for doing so may get not only incorrect but also misleading conclusions due to complexity of the human body - he'd rather spend time and energy on the means that can fix problems quickly and easily.

What allows the Han medicine practitioners to solve problems creatively and efficiently is the underlying Chinese culture that cultivates a pragmatic, holistic, and abstract way of thinking, which I call the "fuzzy-abstract thinking".

The discovery of the blood lipid excretory system is a product of such way of thinking. It fully explains human physiological phenomena and the causes of aging and chronic diseases (Aging and chronic diseases will be further discussed in our next thesis).

From a Han Medicine practitioner's point of view, if we are not able to see the core functions of the horny layer and, more importantly, take advantage of such knowledge to improve well-being of all people, it is indifferent to perceive the matters as one, simple layer of skin or 20 layers of complicated philosophical structure. Never to mention patients who are suffering, who care nothing about medical or scientific discoveries no matter how remarkable they are; the only thing they desperately need and are humbly begging for is an escape from pains and illness. The Western Medicine practitioners focus on studying individual symptoms and offering explanations of root cause of "disease", while the Han Medicine practitioners focus on studying the systematic operations of the entire body and offering relief to "people".

At the end of the movie "Patch Adams", Dr. Adams delivers an inspiring speech and here are a few quotes:

"If we're going to fight a disease, let's fight one of the most terrible diseases of all, indifference …A doctor's mission should be not just to prevent death but also to improve the quality of life…That's why you treat a disease, you win, you lose. You treat a person, I guarantee you, to win, no matter what the outcome."

The whole Western medicine community seems to become more and more indifferent to patients; practitioners concentrate so much on disease per se and forget their mission to remove pains from the suffering.

There are many more pathological problems related to blockage in pores and gland pores waiting for us to figure out and resolve. Anyone interested in studying and testing the subjects discussed in this article is welcomed to contact us for free samples of the Evolia Soap.

We understand that many concepts covered in the article may not be easy to comprehend or make sense to some of the readers due to cultural difference-the article is originally written in Chinese and the foundation of the discussion is rooted in the Han Medicine which is very different from the Western Medicine. Moreover, some notions do not even exist in the physiology of the modern Western medical domain. Therefore, any questions or requests of further clarifications would be highly appreciated to make this article more inspiring to it is readers which is the sole purpose of this writing.

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