

Brief Report

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Brief Report

A Method to Detect Remains of Metabolism in Lipid Lump from Human Skin

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Abstract: Background: There must be some reasons for our body to form lipid droplets or lipid lumps in our skin. While our skin act as the first line of defense against invaders, we still understand little about the lipid lump which can be acquired from our surface skin. The acnes occurred randomly all over our skin, and the majority of us convinced about that they are formed because the cofunction of the skin bacteria and internal secretion. For all of us, the lipid lump squeezed from skin is a minor illness and very common. And almost all the researches focused on biochemical materials associated with this kind of skin diseases and the disease circumference, but seldom research mentioned about the remains inside the lipid lump. **Objective:** The aim of this study is to explore what inside the lipid lump obtained from skin. Try to understand the reasons for these physiological functions. In this paper, the lipid droplets or lumps was aimed to shed light on, figuring out what kind of cracks from metabolism were embedded inside. **Results:** A novel method was introduced for the detection of pathogens within lipid droplets extracted from acne or inflamed pores, as well as normal pores, using microscopic analysis. Through this technique, the presence of cracks from our body within these lipid droplets were identified. **Methods:** Observations were conducted using a microscope, with samples placed on slides and grind like blood smear. To enhance the transparency of the samples, tween-20 was utilized. This reagent was first time to be used for observing such big lipid lump of skin secretion. The evidences were recorded using the DMi8 camera from Leica. **Conclusions:** These findings suggest that the role of the skin extends beyond being a mere barrier for our body. But also help to get rid of cracks or bacteria from our body inside. It appears to serve as a pathway for our body to eliminate pathogens or discharge waste by embedded within lipid droplets. These insights highlight the potential involvement of the skin and its microbiome in the immune response against pathogens and shed light on their role as promoters of pathogen clearance. This discovery indicates that acne or other types of lipid secretion from the skin are no longer exclusively considered diseases belonging to dermatology.

Keywords: lipid lump; acne; immune system; waste removal

INTRODUCTION

The lipid and acnes had been extensively studied, and we have gained significant understanding of its chemical composition. However, as the technical reasons or methods, the visualization of white or brown lipid droplets stop us pointing out things inside. This paper aims to explore the possible excretion of pathogens trapped in lipid droplets and functioned immune cracks embedded in it. These may help give us a better understanding of the role of our skin. Therefore, it is crucial to determine what else was embedded in the lipid lumps. In this study, several pieces of evidence were presented indicating that lipid droplets or lumps were actually act as carriers.

MATERIALS AND METHOD

To overcome the challenge posed by the opaque nature of the lipid droplets extracted from the skin, Tween-20 as a solvent was introduced to dissolve the lipids and facilitate observation of their

contents on a glass slide. These lipid droplets were obtained from a volunteer and appeared randomly as a result of unintentional skin squeezing. Immediately after collection, a smear test was conducted. Due to the non-translucent nature of the lipids, it was necessary to melt them using various solvents. Among these solvents, Tween-20 exhibited excellent performance, providing clear microscopic views for observation. However, it is important to note that the lipid smear tended to dry quickly when exposed to air for an extended period. Consequently, the sample was promptly observed once the lipids were immersed in Tween-20. Employing a Leica DMi8 microscope, distinct bright borders surrounding certain objects were observed within the smear, potentially indicating areas where the lipids had not completely dissolved in the Tween-20 solution.

RESULTS

A new method to be introduced to research what inside the lump lipid produced by skin

In this research, a novel method to investigate the contents within the lipid droplets extracted from the skin was introduced. These lipid droplets, commonly found in the form of lumps, pose a challenge for observation due to their opaque nature. To overcome this limitation, a new approach was developed by using a specific solvent, Tween-20, to dissolve the lipid droplets and enable the examination of their internal composition. By introducing Tween-20 to dissolve the lipid droplets present in acne, the contents within these lipid lumps under a microscope can be observed directly. These lipid lumps can be easily obtained by squeezing the skin, whether it is affected by acne or considered normal. Even in cases where the skin appears to be free of acne, there are still numerous objects present within the extracted lipid droplets that can be observed and examined using microscopy. This technique allows for a detailed exploration of the composition and characteristics of these lipid droplets, shedding light on their role in skin health and potential implications in acne development.

The important way for our skin to discharge waste

The use of Tween-20 to melt the lipid which squeezed from skin has revealed various microstructures that can be observed under a microscope, maybe some part of it. These structures include bacteria, immune cells, and various other substances. The presence of these substances, whether they are still alive or in a state of remains, indicates that the lipid lumps serve as carriers to discharge waste from the body.

While acne vulgaris is commonly regarded as a typical skin disorder and often considered self-limiting, it is also important to recognize that it actually plays a significant role in removing invaders from our bodies.

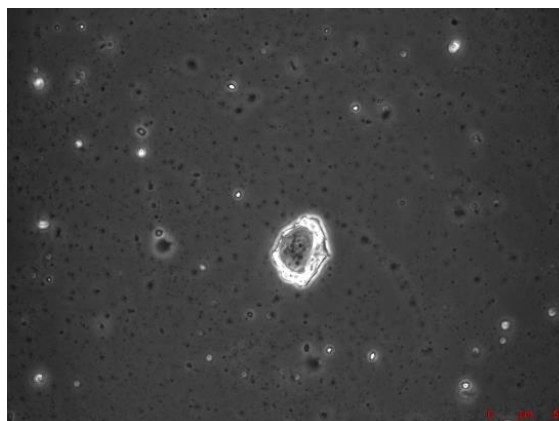


Figure 1. In this picture, the dead cell was blocked by lipid which not completely melt by tween-20 and contribute to the highlight margin of the cell.



Figure 2. In this picture the red box indicates bacterial contain in the lipid which squeezed from the acne.

DISCUSSION

When individuals experience discomfort or irritation on their skin, they often find lipid lumps under their fingernails after scratching or squeezing the affected area. These lipid lumps, which can be amorphous or sometimes enveloped in a membrane, prompt an instinctive response in many people. We tend to remove the lumps by squeezing them out with our fingernails and either throw them away or flick them off directly. These behaviors look or act almost perfectly identical. Several factors can be count. Firstly, it provides temporary relief from the discomfort caused by the presence of the lipid lumps. Secondly, it offers a psychological satisfaction by eliminating something perceived as abnormal or undesirable. Additionally, it may be driven by a desire for hygiene and aesthetics, as some individuals associate the presence of lipid lumps with poor hygiene or an unappealing appearance. It is worth noting that cultural and societal influences may also contribute to this phenomenon, as certain beauty standards or grooming practices emphasize the removal of skin blemishes or imperfections. However, it is important to exercise caution and seek medical guidance when dealing with such skin issues to avoid potential damage, infection, or scarring.

If the underlying mechanism of acne vulgaris as a means for waste removal proved correct, we can potentially develop new perspectives on its treatment and management. And even lead to some novel therapeutic approaches that promote a healthy immune response and aid in the prevention of future infection. For this, there is still much more work to verify the conclusion of this paper.

Chenlu Zhang et al. emphasize the beneficial role of skin microbiota as a natural adjuvant for skin health.[1] They focus on the competition for ecological niche among resident microorganisms and their relationship with the host. However, they overlook the potential influence of skin secretions on fueling outbreaks of skin microbiota, leading to small skin inflammations. On the other hand, Mary et al. suggest that sebum, a type of epidermal secretion, can modulate the composition of the skin microbiome.[2] This implies that epidermal secretions may favor the growth of *Propionibacterium acnes*, which can trigger skin inflammation. Additionally, Gilmar's investigation on chronic hepatitis C patients reveals a link between hepatitis C virus treatment and lipid metabolism.[3] Meanwhile, Marta Bosch et al. discover that mammalian lipid droplets can attract and trap microorganisms as an intracellular defense mechanism.[4] However, it remains unknown how these lipid droplets carrying pathogens are transferred to the skin. Furthermore, a review[5] suggests that acne's etiology is multifactorial, with four main factors primarily focusing on the skin itself and disregarding systemic factors. All of these factors are focused on the skin itself and regardless of what was really inside the lipid droplets.

It is intriguing that lipid lumps can be squeezed out from our skin, regardless of whether it is an acne-prone area or seemingly normal skin. This suggests that our skin may play a crucial role as an organ for our body to eliminate waste, with lipids acting as carriers for this waste removal process.

Many of us unintentionally acquire these lipid lumps when squeezing our skin, and some individuals may even squash them with their fingernails. However, the opaqueness of the lipid

lumps hinders our investigation, concealing what lies within. By introducing tween-20 to melt the lipids, we can examine the contents of these squeezed lumps and uncover a potential mechanism for our immune system to eliminate waste.

Currently, research on acne primarily focuses on its treatment and the psychosocial impact it has, as reported by Kaiane and Bernard[6]. While some researchers have explored the pathogenesis of acne vulgaris[7], their investigations are primarily targeted at the *pilosebaceous* units within the skin tissue. There are limited publications reporting that the occasional small pimples that randomly occur on our skin are actually a form of normal physiological phenomena. These pimples serve as a means for our body to discharge cracks and invaders, although further evidence is needed to support this claim.

In conclusion, the lipid droplets yielded from our skin may serve as a mechanism for our body to clear cracks or bacteria that invade our body. Although these pimples often accompany inflammation and may fester (known as whiteheads), we tend to label them as acne, considering them a skin disease. Due to the complications that can arise from squeezing acne, many people, including some medical professionals, advise against it. However, in the discovery of this short report, I suggest promptly squeezing out the white lipid lumps. Nonetheless, the delivery method of these lipid droplets within the body's liquid system still requires further investigation.

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