Skin, an invisible battlefield

When we think of bacteria, the first things that come to mind are they are bad, cause infections and all sorts of problems. But bacteria and other microorganisms can also help your skin and body stay healthy, says Consultant Dermatologist Dr Chang Choong Chor.

words **Leonard Yap**

We hate them and have declared wars against the much maligned, but invisible, microorganisms that have coexisted with us for as long as humankind walked the earth. But we might want to rethink this perception, says Consultant Dermatologist Dr Chang Choong Chor.

Bacteria are among the many types of microorganisms that co-exist with our bodies. These microorganisms live on the skin and mucous membranes of organs that are constantly in contact with the environment such as the mouth, throat, nose, respiratory tract, stomach and intestines.

Skin flora (also known as microflora) refers to microorganisms which reside on the skin. Trillions of bacteria, fungi, viruses and mites colonise the skin's surface, invisible to the naked eye. In fact, for every 1 of our body's cells, there are 10 bacteria!

Skin bacteria tend to inhabit the outermost layer of the skin, known as the stratum corneum, sebaceous (oil-producing) glands and hair follicles. Under normal conditions, these microbes are non-pathogenic. It is only when our immune defences are low or when the skin is damaged when our beneficial relationship with bacteria is altered and some bacteria become opportunistic pathogens.

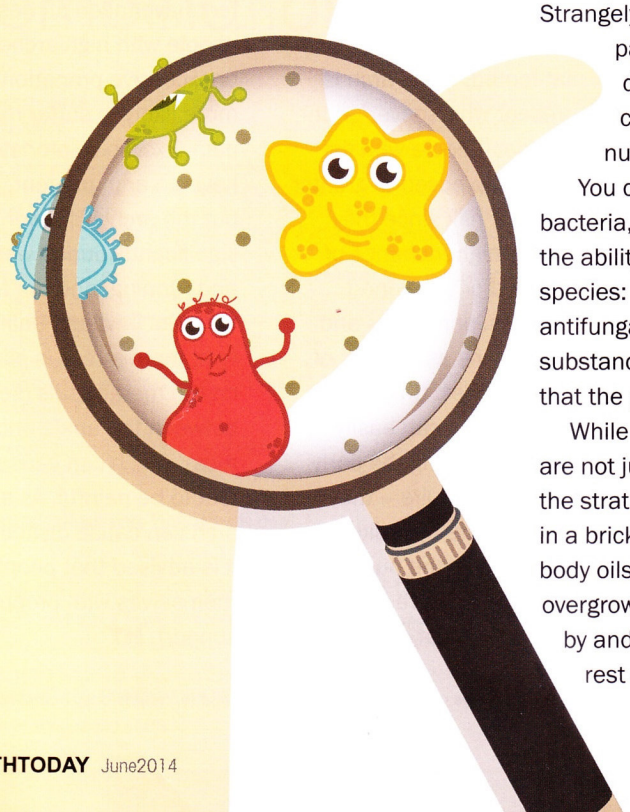
Skin flora lingo

The relationship between flora and the body can be classified as:

1. **Commensal** – translates from Latin as 'sharing the same table'. They cause no apparent benefit or harm
2. **Mutualistic** – benefits both self and host (us)
3. **Parasitic** – exists at the expense of the host
4. **Pathogenic** – causes harm or disease to the host

Why do we need microflora?

Strangely enough, we need these microorganisms to fight harmful pathogens. Essentially, a diverse microflora reduces the dominance of any one bacteria or microorganism, something called ecological competition. All these 'players' compete for nutrients, preventing harmful pathogens from dominating.

You can look at it as a sort of 'war' or competition between bacteria, fungi and viruses. What happens is that each species has the ability to produce substances which can inhibit or kill another species: so, think of them as weapons. Certain bacteria can produce antifungal substances, while certain fungi produce antibacterial substances (antibiotics). It was from the study of these interactions that the properties of antibiotics were discovered.

While the microorganisms go to war, our skin and immune system are not just bystanders. Our skin has its own defences, for example the stratum corneum is formed from dead skin cells and lipids, linked in a brick-and-mortar configuration, acting like a wall. Our sweat and body oils form an acid mantle (pH 4.5-5.5), which prevents bacterial overgrowth. To top it off, our intelligent immune system is standing by and waiting to take on any offending microorganism. So you can rest assured that the battle is seldom lost! **HT**