

## A possible role for human follicle mites in skin's defense against bacteria

Sir,

Free fatty acids constitute 10-30% of the human skin surface fat but occur in only small amounts in the skin lipids of most other animals.<sup>[1]</sup> This difference has been tentatively attributed to the rather unique bacterial flora of humans, in particular *Propionibacterium acnes* and its lipase action on sebum triglycerides. Analysis of pure sebum from isolated human sebaceous glands showed the presence of triglycerides but not free fatty acids, monoglycerides or diglycerides.<sup>[2]</sup> It has been suggested that unsaturated fatty acids, particularly oleic acid, play an important role in elimination of *Streptococcus pyogenes* and *Staphylococcus aureus* from human skin.<sup>[3]</sup>

Herein, I would like to suggest that not only the unique bacterial flora of humans, but also the follicle mites could play an important role in the skin's defence against pathogenic bacteria. *Demodex folliculorum*, the follicle mite, is an obligate parasite of the human pilosebaceous follicles. A morphologically distinct species, *D. brevis*, occupies the sebaceous and meibomian glands.<sup>[4]</sup> Follicle mites show a predilection for areas of high sebum production and are most numerous on the forehead, cheeks, nose and nasolabial folds but they are also found on the scalp, in the external ear, in eyelash follicles and meibomian glands and on the upper chest and nipples. They have also been discovered on the penis, mons veneris, buttocks and in ectopic sebaceous glands in the buccal mucosa. Most infested follicles contain 2-6 mites but occasionally they are much more numerous. Mites have been isolated from humans of all ages except neonates.<sup>[5]</sup>

Importantly, like bacterial flora found on human skin, follicle mites have been shown to contain immunoreactive lipase,<sup>[6]</sup> which can produce free fatty acids from sebum triglycerides. Hence I suggest that follicle mites could play a role in the human skin's defence against pathogenic bacteria, particularly against *Staphylococcus aureus* and *Streptococcus pyogenes*.

### REFERENCES

1. Nicolaidis N. Human skin surface lipids-origin, composition and possible function. *In*: Montagna W, Ellis RA, Silver AF, editors. *Advances in biology of skin, Vol 4, Sebaceous glands*. Pergamon: Oxford; 1963. p. 167-86.
2. Kellum RE. Human sebaceous gland lipids: Analysis by thin-layer chromatography. *Arch Dermatol* 1967;95:218-20.
3. Richetts CR, Squire JR, Topley E. Human skin lipids with particular reference to the self-sterilizing power of the skin. *Clin Sci* 1951;10:89-96.
4. Hirst S. *Studies in Acari, No 1. The Genus Demodex, Owen*. British Museum (Natural History): London; 1919.
5. Franklin CD, Underwood JC. Demodex infestation of oral mucosal sebaceous glands. *Oral Surg Oral Med Oral Pathol* 1986;61:80-2.
6. Jimenez-Acosta F, Planas L, Penneys N. Demodex mites contain immunoreactive lipase. *Arch Dermatol* 1989;125:1436-7.