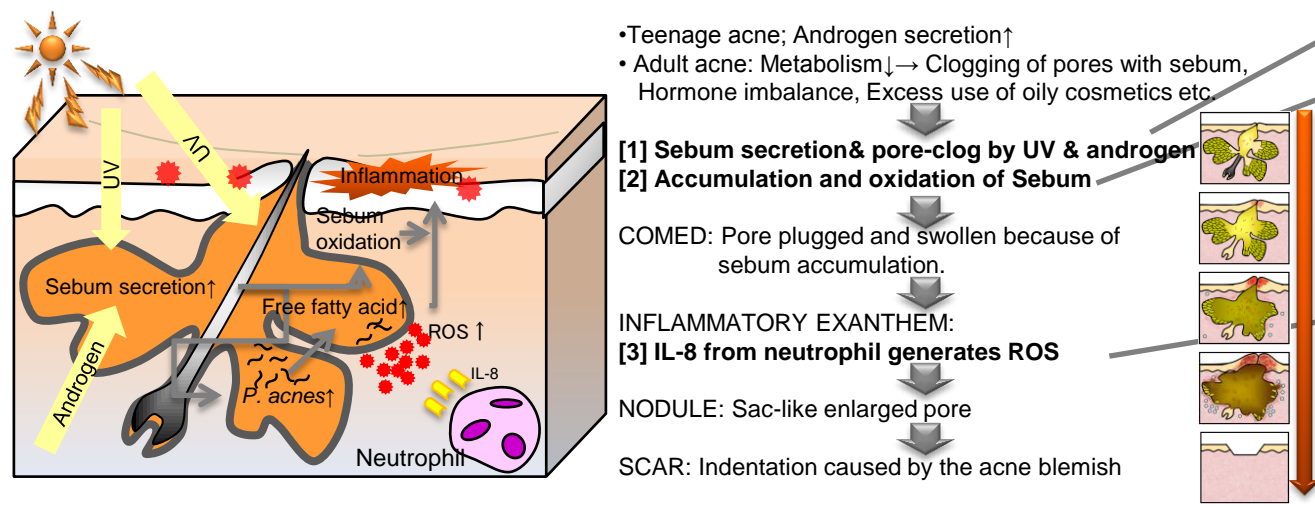


Radical New Approach for Treating Acne

- Fullerene eliminates ROS, which plays a role in acne formation.
- Fullerene strongly inhibits sebum oxidation, which is responsible for acne.
- Fullerene prevents inflammation, which causes exacerbation of acne.
- Fullerene takes care of acne by maintaining skin barrier function.

Pathogenesis of acne and ROS

Acne vulgaris is an inflammatory disease caused by abnormal lipid metabolism, keratotic aberration, bacterial multiplication, and generation of ROS in pores on the face and back.



- Teenage acne; Androgen secretion ↑
- Adult acne: Metabolism ↓ → Clogging of pores with sebum, Hormone imbalance, Excess use of oily cosmetics etc.

[1] Sebum secretion & pore-clog by UV & androgen
[2] Accumulation and oxidation of Sebum

COMED: Pore plugged and swollen because of sebum accumulation.

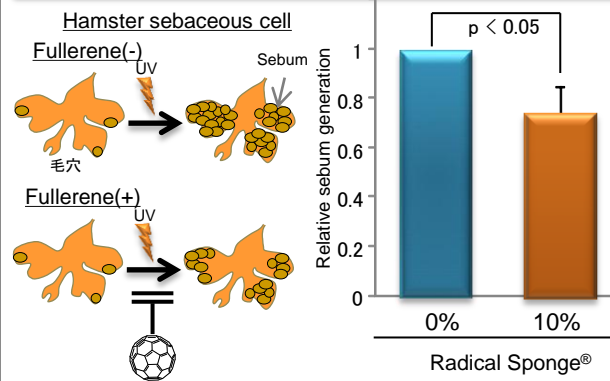
INFLAMMATORY EXANTHEM:
[3] IL-8 from neutrophil generates ROS

NODULE: Sac-like enlarged pore

SCAR: Indentation caused by the acne blemish

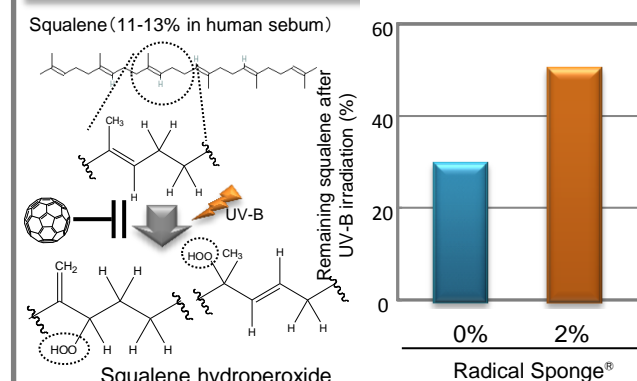
[1] Preventive effect of sebum secretion

(Data source: Associate Prof. Inui, MD, PhD, Osaka University)



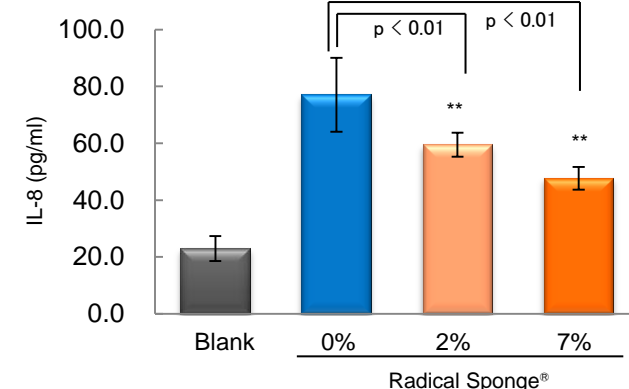
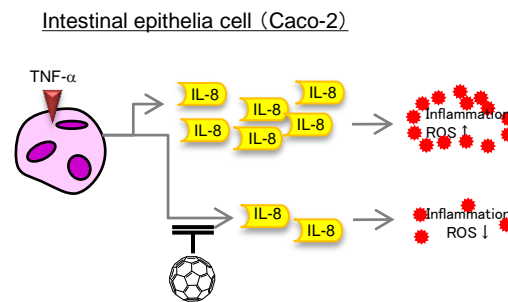
[2] Preventive effect of sebum oxidation

(Data source: Prof. Miwa, PhD, Prefectural University of Hiroshima)



[3] Anti-inflammatory effect (IL-8)

(Data source: Prof. Tsutsumi, PhD, Osaka University)



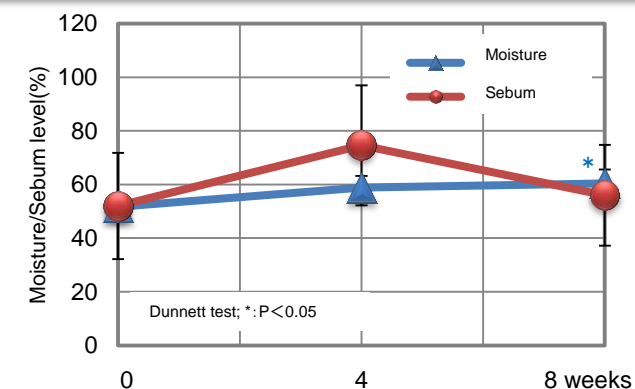
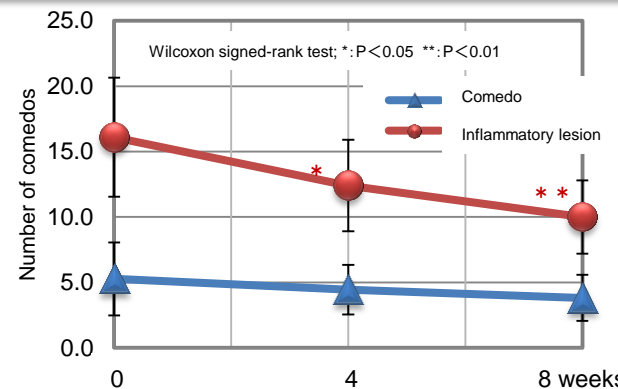
Clinical Trial

(Editor: Associate Prof. Inui, MD, PhD, Osaka University, Testing agency: SOUKEN)

Subjects Healthy adults with less than 20 acne were selected for the test. Japanese 5 men and 6 Japanese women (23–39 years old; mean (SD), 30.7 (5.3) years) participated.

Test 0.4 ml of 1% LipoFullerene® containing gel*1 was applied on the entire face twice a day.
*1 Fullerene C60 (2 ppm), Vegetable squalane (1%), Phenoxyethanol (0.5%), ITO gel base TN (Water, Glycerin, Carbomer, Poly (acrylic acid sodium salt), Methylparaben, Propylparaben (49.25%), and Water (49.25%).

Results Clinical features, skin moisture level, and sebum value were evaluated by digital photography (VISIA). The skin moisture level significantly increased, and skin barrier function was constant. Also, the number of inflammatory exanthem significantly decreased.



Moisture level significantly increased. Sebum and porphyrin contents, and conspicuous pores were not altered. General active ingredients significantly decreased barrier function and moisture level by reducing the sebum content. Mean number of inflammatory exanthem was significantly decreased after 8 weeks.

Active ingredient	Cornified layer		Sebum			P. acnes		Inhibition of inflammation				Adverse effects		
	Normalization	Abrasion	Anti-androgen	Adsorption	Suppression	Anti-oxidation	Anti-bacteria	Lipase inhibition	COX-2	TNF-α	IL-1β		IL-8	
Sulfur		✓		✓			✓							Dryness, roughness, rash, itching
Salicylic acid		✓					✓							
VitaminC derivatives							✓							Dryness
Fullerenes (Radical Sponge®, LipoFullerene®)	✓				✓	✓		✓	✓	✓	✓	✓		No side effect

