

ANTI-ACNE EFFICACY TESTING SERVICES

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In Asia, 50% of women ages 15-30 years old are concerned about oily skins. In Europe, 80%-95% of the teenagers are concerned while in America only 50% of this specific population uses appropriate cleaning products to fight oily skins with comedones (Mas-Chamberlaine *et al.*, 2002). Everywhere, an increase demand is seen for treating sebaceous gland disorder. Thus, there is a specific market for acne cream and related products. Recently, AOTD received many requests for efficacy testing of the acne creams and related cosmetic products from local cosmetic manufacturers. Data on the effectiveness is important to support marketing claims. Therefore, anti-acne efficacy test service is set up to support the niche market of acne-related cosmetic products.

DEFINITION OF ACNE

Acne is defined as a disorder of the sebaceous follicles and it is also a condition of human skin characterized by the excess flow of sebum from the hair follicles causing it to thicken and form a solid plug within the follicles known as comedone (Shalita and Lee, 1998). This type of acne is referred as acne vulgaris or regular acne and can be treated using anti-acne creams or gels (Rothman and Lucky, 1993; Sonya and Shalita, 1998). MPOB has set up a testing facility specifically to determine the efficacy of the anti-acne active(s) or products and only covers the acne vulgaris and not acne associated with hormone influence. Figures 1 to 4 showed different types of acne.



Figure 1. Comedone acne.



Figure 2. Papules of inflammatory acne.



Figure 3. Pustules of inflammatory acne.



Figure 4. Nodular acne.

THE IMPORTANT OF ANTI-ACNE TESTING SERVICES

The occurrence of acne takes place as a multistage process, and is now well described: hyperseborrhea associated with hyperkeratinisation, both contributing to pore obstruction and microcomedones formation. Locally, comedones offer appropriate medium to bacteria proliferation; feeding from sebum

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tryglycerides, *Propionibacterium acnes* releases irritant fatty acids along with bacteria chemotoxin contributing to local inflammation (Simion, 2001). Reduction of hyperseborrhea, which is a decrease in sebum production, will indicate the effectiveness of the anti-acne product. A Sebumeter can quantify this reduction *in vivo* by measuring how much sebum is absorbed on a special tape per cm² (Figure 5). A comparison of the sebum content can be made before and after application of the anti-acne products. Normally, a six weeks study is enough to determine the product efficacy. The reduction of comedones or microcomedones can be quantified *via* direct lesion count.

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TABLE 1. ANTI-ACNE TESTS AVAILABLE IN MPOB, TEST PROCEDURES, DURATION AND COST

Test	Sample	Test procedure	Duration	Cost per test
<i>In vitro</i>	Active ingredient 50 g (min.)	Specific doses of the sample are tested against <i>P. acnes</i> .	1 week	RM 1000
<i>In vivo</i>	Actual product. Enough for daily application for 6 weeks	Product is applied twice daily on selected subjects. Sebum secretion and actual lesions are monitored before and after product application for 6 weeks.	6 weeks	RM 5000



Figure 5. *In vivo* sebum measurement.

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The anti-acne tests can be categorized into two parts, *in vitro* and *in vivo*. The *in vitro* test is carried out to determine the effectiveness of the active(s) used in the product formulation against normal flora of acne lesions *e.g.* *Propionibacterium acnes*, which is the main microorganism in acne lesions. *In vivo* test includes direct method of lesion count, which is important because it provides exact quantification of papules, pustules and comedones (open and closed) (Rietschel, 1990). The method of lesions count enabled the quantification of acne. Table 1 shows the *in vitro* and *in vivo* anti-acne test procedure, duration and the cost per test.

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