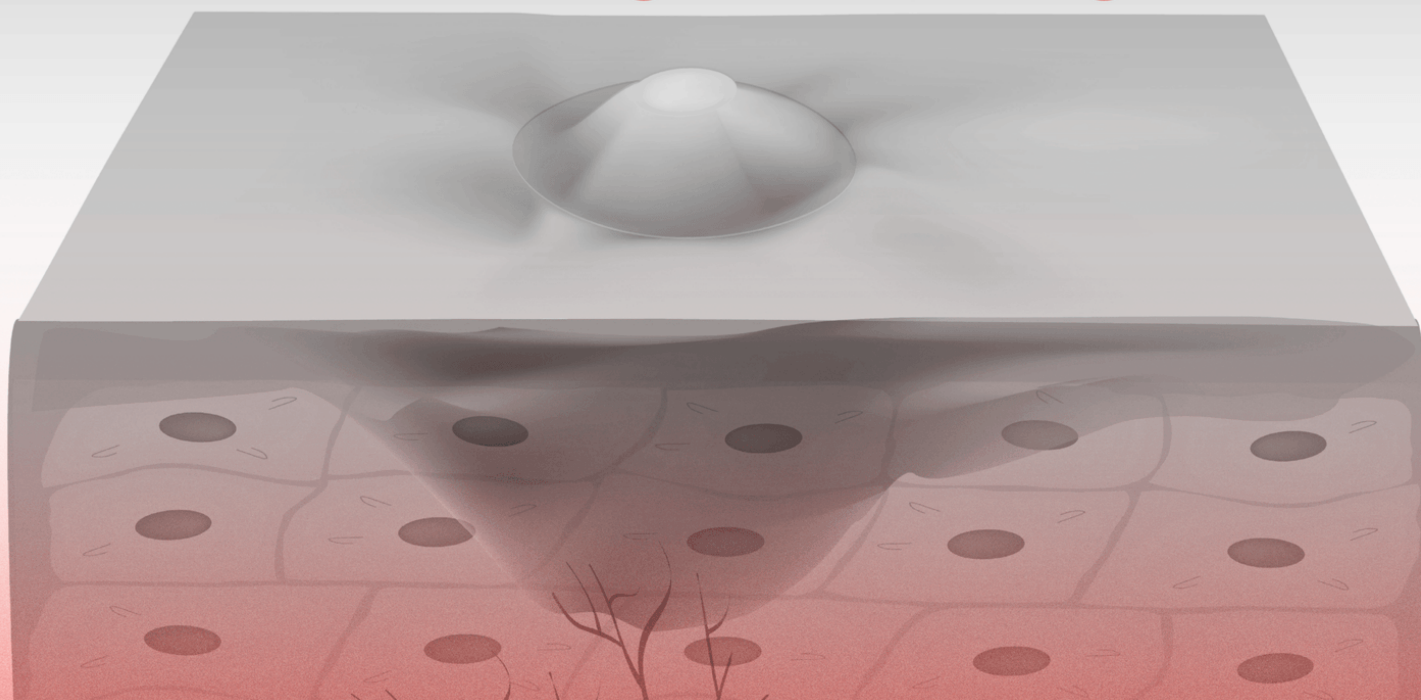


Comedogenicity Blog



September 17, 2026



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Though choosing the correct active ingredients or combination of active ingredients is key for an effective topical acne treatment, choosing a suitable vehicle is an essential consideration as well. Comedogenicity is a term used to describe the tendency of a substance to cause inflammatory or noninflammatory comedones, or clogged follicles. Generally comedogenic substances are ones that promote abnormal keratinization and shedding of cells resulting in a keratin plug that blocks the pilosebaceous unit resulting in buildup of sebum and debris, creating an ideal environment for microbial growth. This can of course lead to the development of acne lesions.^{1,2} The term 'acnegenic' is also sometimes used. This term is subtly different and refers to substances that cause the development of acne lesions. Oftentimes materials that are comedogenic, that is, they cause clogging of the follicles, are acnegenic as well. The reverse is also often true that substances that cause acne often do so by causing the formation of comedones, though, there are cases where other sources of irritation can be acnegenic without a specific follicle clogging mechanism.⁵

Factors that contribute to comedogenicity include both ingredients as well as other properties of the vehicle, such as pH. When it comes to ingredient testing, it should be noted that some comedogenic testing occurs only in animal models (such as rabbit ear models) or occurs using the raw product, not the product as a percentage of a vehicle which makes it complicated to determine the actual comedogenicity or acnegenicity of the material used at a standard

concentration in topical vehicle.¹ Even studies that do test in human subjects may apply substances under occlusion to the skin for extended periods of time, which may also influence final results as increases in lesions in that case can be noted with occlusion and placebo as well.³

Limited available studies have found the below common excipients to be comedogenic, note that this list is not comprehensive:^{1,2}

- Isopropyl myristate
- Isopropyl palmitate
- Butyl stearate
- Lanolin derivatives
- Wheat germ oil
- Sodium Lauryl Sulfate
- Octyl palmitate
- Octyl stearate

These studies as well as many anecdotal references available online tend to assign a numerical rating, most frequently on a 0 to 5 scale, with 0 being no follicular keratin plugging and 5 being severe comedone formation. Lower scores are considered noncomedogenic, scoring 3 or over suggests that an ingredient may be comedogenic.¹ Though such studies in rabbit ears can provide some information, data on usage of these ingredients at appropriate concentrations as part of a whole vehicle are the most applicable evidence if available.

In addition to ingredient considerations, other properties of a vehicle can also play a major role. For example, population and activity of acne pathogens including *Cutibacterium acnes* (*C. acnes*) and *Staphylococcus aureus* (*S. aureus*) have been shown to increase as skin pH raises above the slightly acidic ideal pH of the skin.⁴ Vehicles that raise the pH of the skin may create a more ideal environment for growth of acne pathogens such as *C. acnes*.^{4,6}

Given the complications behind predicting the comedogenicity or acnegenicity of a vehicle, Fagron submitted several vehicles to an independent laboratory for testing. Each vehicle was tested in 30 or more subjects over a period of 29 days of regular application to the face once to twice daily. The vehicles below were found to be noncomedogenic and nonacnegenic:

- Cleoderm
- Nourivan Antiox
- Occluvan
- Phytobase
- Seraqua
- Versatile Vanishing Cream

References:

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