



Description:

- *Cutibacterium acnes* (*C. acnes*), formerly known as *Propionibacterium acnes*, is an anaerobic, non-motile and non-spore-forming Gram-positive bacterium that is part of the human skin flora.
- *C. acnes* owes its name to its ability to generate propionic acid.
- Thomas Casper Gilchrist isolated this bacteria in the 1900s.

Interesting Facts:

- *C. acnes* was first suggested as being responsible for acne in 1896. Approximately 85% of the population experience minor acne between the ages of 12 to 24.
- Although its usual pigmentation is white to grey, *C. acnes* looks orange under blacklight.
- *C. acnes* grows in the lipid-rich microenvironment of the hair follicles and its optimum growth temperature is 30 to 37°C.
- *C. acnes* can be killed with ultraviolet light.
- *C. acnes* is a nonspecific immune stimulant.

Infection:

- *C. acnes* is an opportunistic pathogen, mainly known as the cause of acne vulgaris but also responsible for post-operation and medical device related infections.
- *C. acnes* is recognised to be an important isolated pathogen in prosthetic shoulder joint infections, fibrosis of breast implants and infections caused by cardiovascular devices.
- In 2009, a study by A. Patel showed that *C. acnes* is more likely to infect the shoulder than the hip or knee after surgery, and that men have a higher natural bacterial bioburden than women.
- Although acne is caused by many factors, one of the main causes is the over activity of the oil glands which encourage bacteria in the skin to multiply - this bacterium uses the oil gland secretions, sebum, as a source of energy. *C. acnes* multiplies in skin with an oily build-up, leading to the inflamed spots characteristic of the acne.

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- Media such as Tryptone Soya Agar Blood Agar (BTSA) can be used to examine for the presence of *C. acnes*. Colonies appear convex, semi-opaque, and glistening and can be seen pigmented in an array of colours from white to red these are indicated as a positive result. This is then confirmed using identification techniques such as MALDI-ToF (Matrix Assisted Laser Desorption Ionization-time of Flight).
- *C. acnes* can be one of many challenge microorganisms used in the Zone of Inhibition (ZOI) testing. This is usually a chosen microorganism used with topical facial products.
- As a skin commensal organism, *C. acnes* is ubiquitous in the environment. These organisms are particularly problematic where you have opportunities for shedding of skin cells, hence why appropriate personal protective equipment (PPE) and gowning procedures are of vital importance in settings where microbial contamination may cause an issue e.g. cleanrooms.
- As *C. acnes* is found in the environment it can be found as a contaminant in microbial tests such as the sterility test. It is commonly picked up in this test due to the use of THY as it is an anaerobic media. It may be useful to include anaerobic checks in your environmental monitoring where such organisms have been identified as a potential risk.

