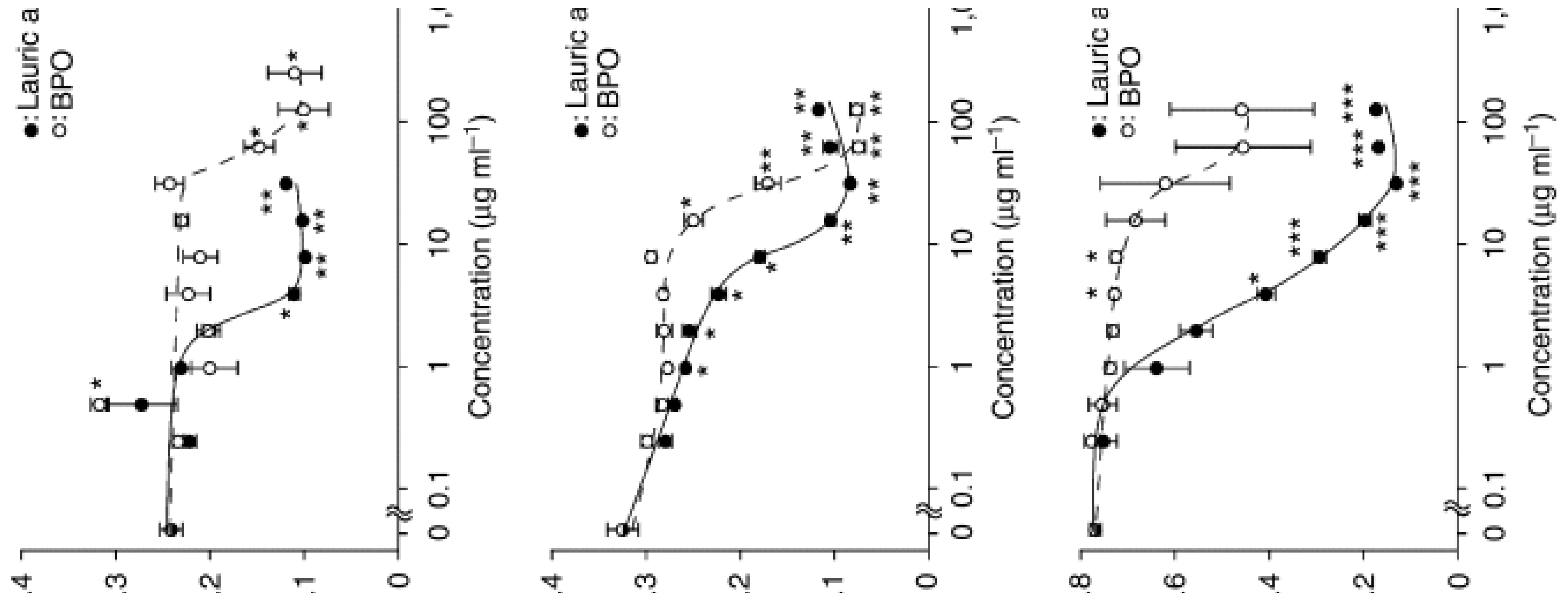


Antimicrobial Property of Lauric Acid Against Propionibacterium Acnes: Its Therapeutic Potential for Inflammatory Acne Vulgaris

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Acne vulgaris is the most common disorder of human skin that affects up to 80% of individuals in their lives (Dreno and Poli, 2003). Acne has many different symptoms including comedones, papules, pustules, nodules, cysts and pilosebaceous inflammation.

Antimicrobial effects of lauric acid and BPO against skin bacteria

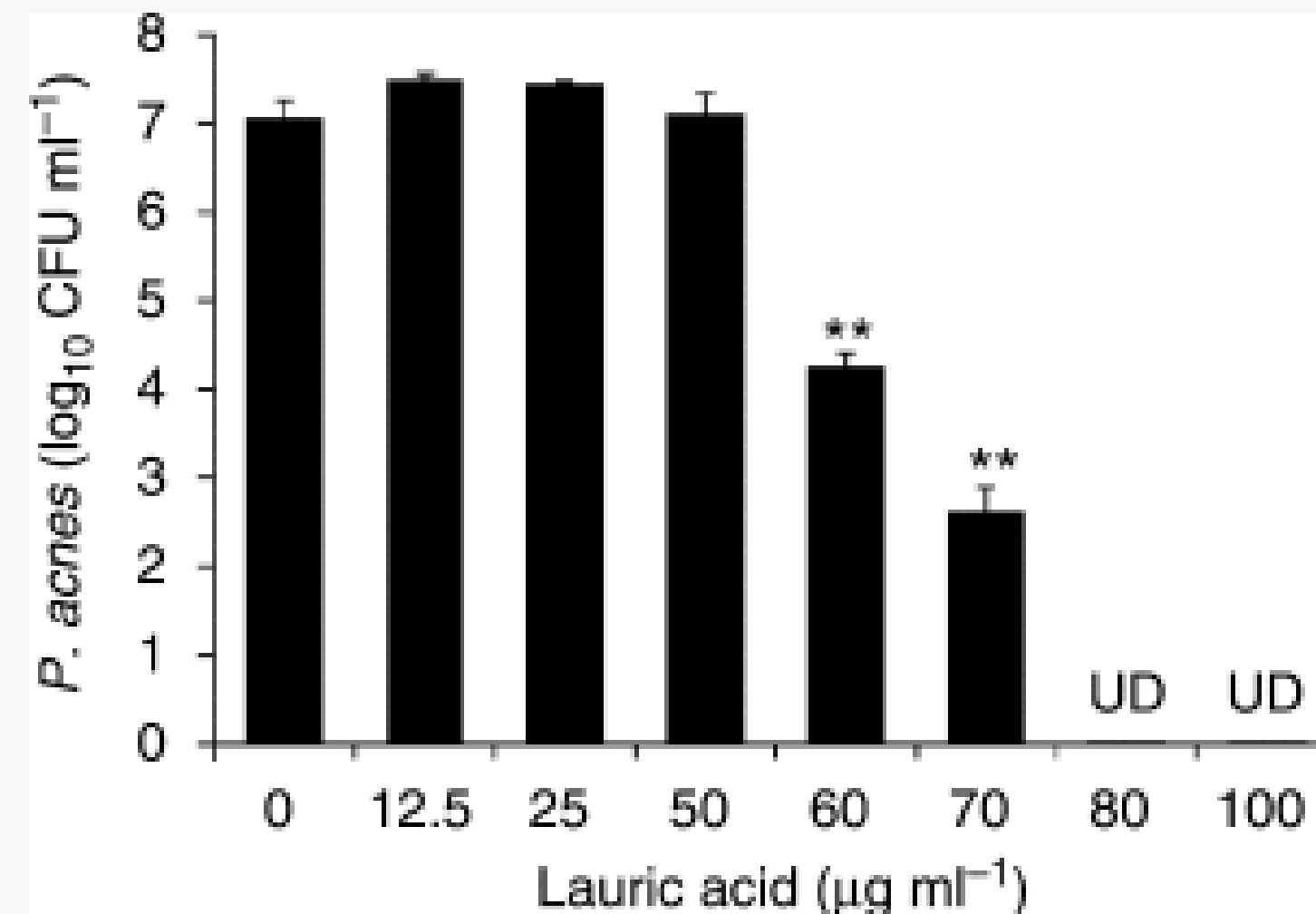


PROTOCOL

Lauric acid (C12: 0), is the most potent antimicrobial saturated fatty acid (Wille and Kydonieus, 2003). It is commonly found in natural products like coconut palm and milk. Lauric acid exerts strong antimicrobial activity against many Gram-positive bacteria (Kabara et al., 1972; Kitahara et al., 2004; Rouse et al., 2005; Skrivanova et al., 2005), the potential of lauric acid to be used as a natural antibacterial agent in acne therapy

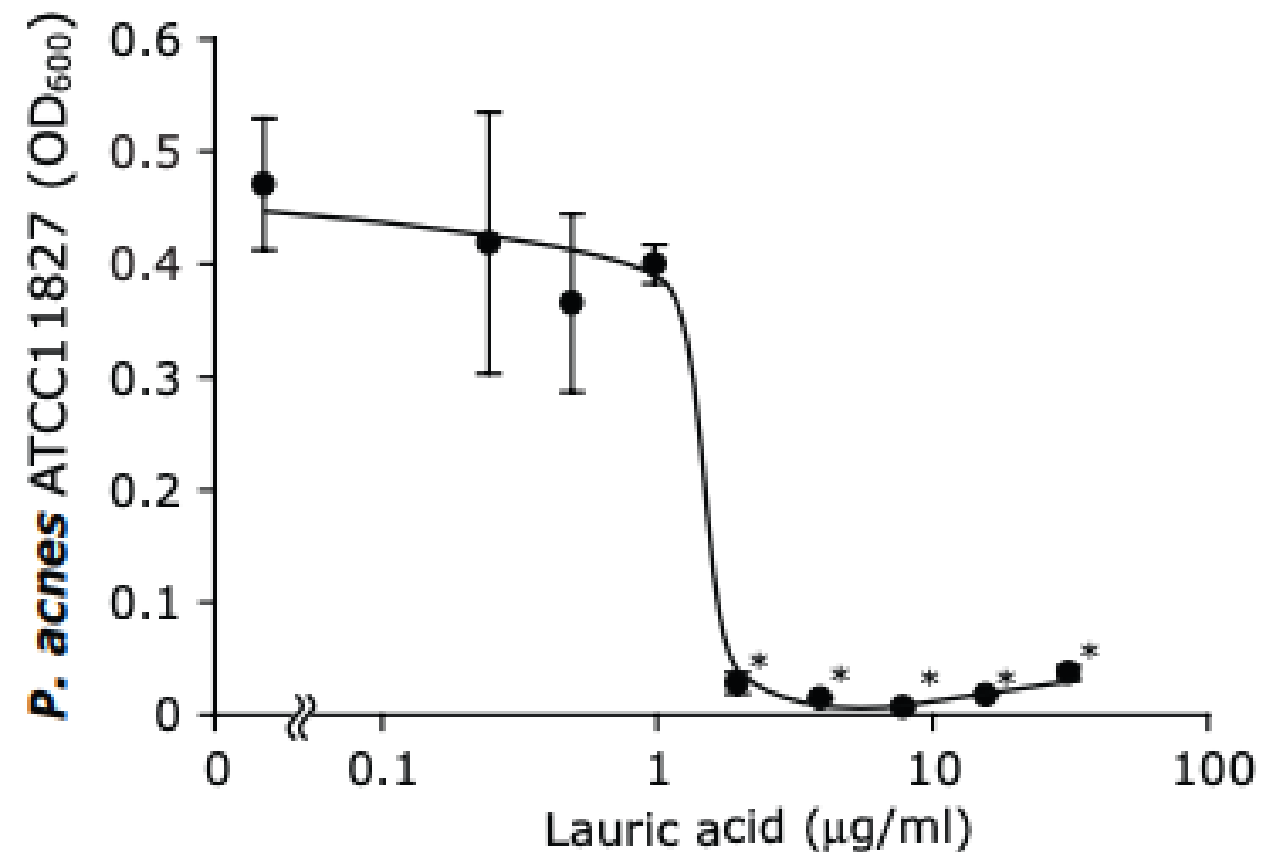
Clinical assessment

In this study, we have demonstrated the potential of lauric acid as an alternative option for antibacterial therapy in acne treatment. Interestingly, lauric acid showed stronger antimicrobial activity as compared with BPO against skin bacteria, including *P. acnes*, in vitro. It also showed therapeutic potential against *P. acnes*-induced inflammation in vivo.



DETAILS - BEFORE/AFTER

Figure S2. Inhibitory effects of lauric acid on bacterial growth of *P. acnes* (ATCC 11827). *P. acnes* (ATCC 11827) (1×10^6 CFU/ml) was incubated with lauric acid in 5% DMSO under anaerobic conditions at 37°C for 72 h. After incubation, bacterial growth was determined by measuring OD600 using a microplate reader. Data represent mean \pm SE of three individual experiments (* $P < 0.05$ by Student's t-test)



Summary

Our results indicate that lauric acid exerts the inhibitory effect on the growth of skin bacteria such as *P. acnes*, *S. aureus*, and *S. epidermidis* at a concentration 15 times lower than that of BPO, a frequently used oxidizing agent in acne treatment

In addition, ED50 values from dose–response curves showed that *P. acnes* is the most sensitive bacteria to lauric acid among the skin bacteria tested (Figure 1 and Figure S2, Table 1). Lauric acid exerts antimicrobial activity on two *P. acnes* strains (ATCC 6919 and ATCC 11827) and other strains isolated from human sebaceous material (Puhvel and Reisner, 1970)

Thus, lauric acid may have the potential to be used as an effective antibacterial treatment for antibiotic-refractory acne.