

# International Conference on Infectious Diseases, Diagnostic Microbiology & Dermatologists Summit on Skin Infections

October 03-05, 2016 Vancouver, Canada

## Mycobacterial growth inhibition by lipophilic compounds

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With the appearance of HIV/AIDS, the unavailability of potential vaccine to prevent the disease and the multidrug-resistant, tuberculosis becomes one of the most prominent health care problems. In this study, we evaluate the potential activity of 2 lipophilic compounds on mycobacterial growth inhibition. Furthermore, an effort was made to understand the mechanism of the growth inhibition by the test agents. The effect of 2 lipophilic compounds, viz., sodium benzoate and deoxycholate on growth and various cellular constituents, such as lipids, nucleic acids and proteins was carried out on *M. smegmatis* using shake and surface culture. Phospholipids were further investigated by studying the P32 incorporation into phospholipids. Medium and short fatty acids especially mycolic acids were further analyzed. FAS activity was estimated by studying the incorporation of acetate-1-C14 into lipids. There was a significant reduction in growth rate of *M. smegmatis* by the test agents. MLC of sodium benzoate was higher than that of and sodium deoxycholate and it was 0.3% w/v and 0.06% w/v respectively. The growth inhibition accompanied by reduction in the cell components such as lipids, nucleic acids and proteins. Both agents caused drastic alterations in lipid compositions especially phospholipids and fatty acids. The alteration in lipid is accompanied by reduction in the short and long fatty acid synthesis (ex: Mycolic acids). FASI and II assay indicated reduction in their activity. Therefore the consequent impairment of membrane permeability function is expected resulting growth inhibition. Mycobacteria can adapt to various undesirable environmental factors such as nutrients and toxic substances by modifying their membrane structure and constituents; lipids and fatty acids especially mycolic acids. Hence, any alteration in the lipid constituents of the cell wall obviously will affect the metabolism of the cell which in turn can affect the growth rate of the organism. However, further investigation on the molecular mechanism of action is needed.

### Biography

Falah A M Salih has completed his PhD from Delhi University, India. He has been involved in Teaching and Research in national and international universities for 31 years. Currently, he is working as a Professor in the Faculty of Medicine and Health Sciences in the University Malaysia Sabah, Malaysia.

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