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Growth curve of *Diplococcic S. pneumoniae* and an alternative preventive therapy

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In antibiotic resistance crisis and antigenic variation, an alternative preventive therapy needs to be developed against the pathogen *S. pneumoniae* and therefore its growth curve is highly important. We have shown that *S. pneumoniae* grows in three different phases—pre-competent, competent and post-competent. Dr. Fred Griffith's (1928) smooth colony is our growth curve but his rough colony needs interpretation. In our growth curve, smooth colony shows uneven contour after 48 hours of growth and becomes rough colony which is equivalent to our post-competent phase confirming the heterogeneity of their growth phases (pre-competent, competent and post-competent). Pre-competent shows only the growth in size with a distinct morphological change—round to oval. Then they attain the competent phase with a cleavage site to excrete pheromone and receive bio-signalling (an ability to reproduce). The post-competent phase shows the thinning of peptidoglycan layers as the purple becomes pink by Gram staining technique. During this period there is an autolysis of the old, following the depletion of nutrients in the growth media (starvation) and the nutrients released promote the young to grow out radially but all are still in chain (heterogeneity of pre-competent, competent and post-competent). The heterogeneity of their growth phases is confirmed by the presence of pink and purple members in the same population. If the growth medium (rich or minimal) contains xylitol—a five-carbon sugar alcohol, xylitol phosphate

is formed and interferes in their bio-signalling essential for reproduction of the competent. Interaction of StkP and PASTA located at the cleavage site of diplococcic shaped bacteria is necessary for reproduction. Xylitol should provide an ideal alternative preventive therapy for children (body immunity is growing) and the elderly (body immunity is decaying).

Biography

Sunil Palchaudhuri-PhD, DSc- is Professor of Immunology and Microbiology at the WSU School of Medicine, USA for the past 36 years, after his Postdoctoral training in Canada (NRC Scholarship) and NIH Post Doctoral Fellowship at NYU School of Medicine with Professor W K Maas. He was awarded the New York State Irma T Hirschl Career Scientist Award in 1975–1980 and was the Fogarty Senior International Fellow (1984) working on an epidemic in Kolkata caused by an antibiotic resistant strain of *Shigella dysenteriae*. He was a Fulbright Visiting Professor, in 1993–1994 at the Calcutta School of Tropical Medicine, Kolkata with Mother Teresa to develop an early detection technique for leprosy in children. He is a Reviewer in *Journal of Bacteriology* Editorial Board. He has published extensively in international journals of repute such as *Journal of Molecular Biology*, *Proceedings of the National Academy of Sciences of the United States of America*, *Journal of Bacteriology*, etc. Currently, he is preparing manuscripts on Antibiotic Resistance Crisis, Transposons And Bacterial Diseases.

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