

## An Alternative Preventive Therapy to Eliminate Antibiotic Resistant Bacteria

*“Use of Xylitol in combination with fluoride should not only be an ideal substitute of antibiotics but also an affordable alternative preventive therapy (low cost) without requiring much of body immunity of the patients (children and the elderly)”*



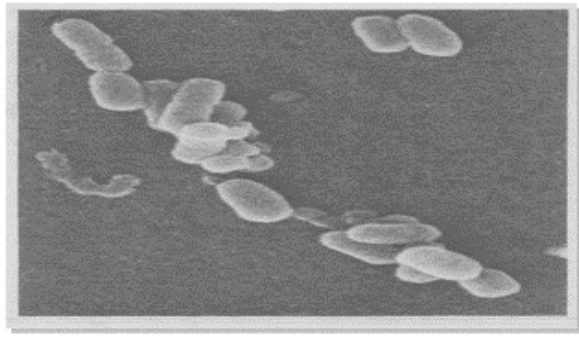
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### COLUMN ARTICLE

At length, the WHO has recognized that our antibiotics are no longer effective but surprisingly they are silent about any effort made in developing any alternative therapy to beat these antibiotics resistant microbes. Regardless, all commandments of WHO are equally important not only for developing countries but also globally. A considerable amount of antibiotics is being sold to poultry and cattle farm owners for adding to animal feed at a low concentration to accelerate the growth of animals! On the contrary, our physicians prescribe their human patients high dose of antibiotics with a long duration compared to what they had prescribed 10 years ago. We have silently accepted a major defeat of our antibiotics in their battle with pathogens and best evidence is the mortality rate of our children and the elderly from the diseases caused by *Streptococcus pneumoniae* is increasing for the last 20 years. We must develop an alternative therapy to cripple the genetic ability of this microbe which is helping themselves to outgrow even in the presence of our medicines. The efficacy of recently applied polyvalent vaccines against *S. pneumoniae* is positive news; but we should not forget that this enemy is endowed with an ability to go for serological variations to prevail in our nasopharynx. They may escape their microbiological identification being in a latent phase (after shutting off their metabolism). How much do we know about the life cycle of *S. Pneumoniae* after Dr Fred Griffith's description of two kinds

of bacterial colonies in 1928: smooth (growth phase) and rough (after incubation for 24-48 hours on blood agar medium)? We have given an answer.

We have already published a growth curve of *S. oralis* in three different phases - pre-competent, competent and post-competent. The post-competent phase is the same as Dr Griffith's rough colony which defines the uneven contour of the colony. We are in full agreement with the investigators who have recently published articles on cell division of *S. pneumoniae* with a conclusion that it differs considerably from the cell division of Gram-negative *E. coli* K-12 (binary fission). Of course, *E. coli* K-12 genetics has helped us understand the subject "Gene regulation in operon or in regulon" but we think that gene cloning with transposable genetic elements like Tn1, Tn2 and Tn3 encoding ampicillin resistance traits may have planted the seed of today's penicillin resistance crisis. Our article published in ASM journal (AEM January issue, 2011) shows an alternative preventive therapy with five carbon sugar alcohol (xylitol) in such a crisis. We have established that the Mitis group bacteria grown in broth containing both xylitol and fluoride should eliminate their entire population which otherwise will prevail in a latent phase. This should be a substitute of antibiotics and an affordable alternative preventive therapy without requiring much of body immunity of the patients (children and the elderly). Our scanning electron micrograph of rough colony shows a pattern of their total population in a latent phase.



**Figure 1:** Rough colony of the *S. oralis* (the rough colony of *S. pneumoniae* should not differ) as visualized by SEM at a magnification of 3000X. Individual diplococcus in a pair (below) and the old in a short chain (above) are seen separated from the major clusters held in parental chain.

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