The Preliminary Study About The Antimicrobial Activity of Organosilicon Quaternary Ammonium Chloride on American Foulbrood Pathogen: *Paenibacillus larvae*

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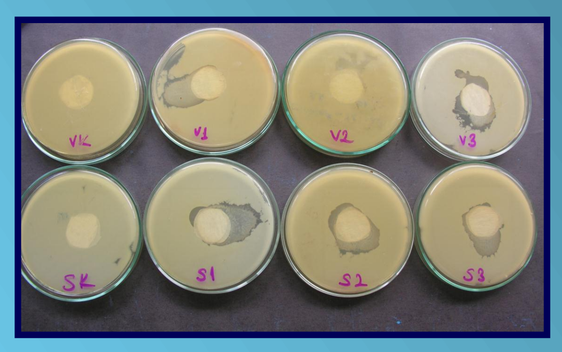
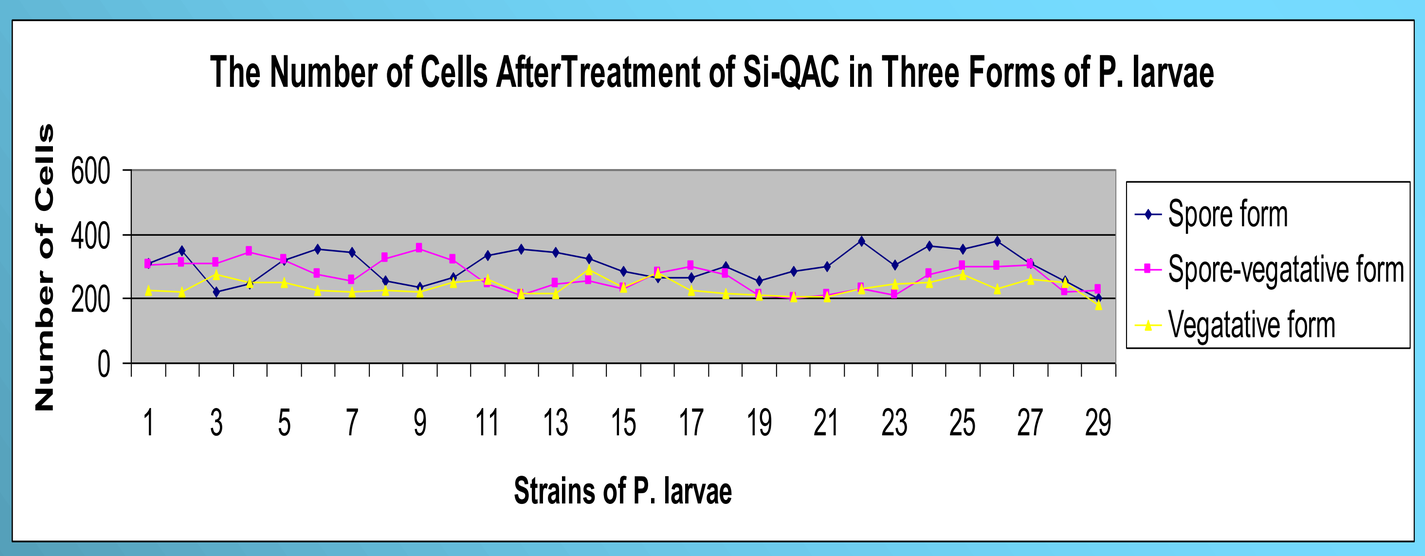
The hydrolysis product of a quaternary amine-containing organosilicon salt (Si-QAC), 3-(trimethoxysilyl)-propyldimethyloctadecyl ammonium chloride exhibited antimicrobial activity against a broad range of microorganisms while chemically bonded to a variety of surfaces. In this study, the chemical was tested for American Foulbrood (AFB) pathogen: *Paenibacillus larvae.* It is very common among the colonies in Turkey. So, AFB is also big problem economically in Turkish Beekeeping Industry. Si-QAC was examined for 28 different local strains of *Paenibacillus larvae* spore, vegetative and spore-vegatative forms and P. larvae strain ATCC 9545 Si-QAC(Bee Guard®) was prepared by Nanotechnology Company, Istanbul.



The inhibition zone of Si-QAC on the spore and vegetative forms of P. larvae (VK:Vegatative Control, V1, V2, V3: Three replicated experiments of vegetative form treated with Si-QAC., SK:Spore Control, S1,S2, S3: Three replicated experiments of vegetative form treated with Si-QAC)



% Reduction= control- sample/ control x 100

All strains were growth in Brain-Heart Broth Medium (Sigma, 42gr/L) and then transferred 0.1 ml bacteria ($1x10^8$ CFU/ml) MYPG Medium. The experiment was set up for spore and vegetative forms in 4 parts: 1.Inoculation of P.larvae spores/vegatative forms to MYPG medium added Si-QAC before, 2.Addition of Si-QAC to the medium and after drying process inoculation of P.larvae spores/vegatative forms, 3.Inoculation of P.larvae spores/vegatative forms to MYPG medium sprayed Si-QAC before, 4. Spraying of Si-QAC to the medium and after drying process inoculation of P.larvae spores/vegatative forms.

The results show that Si-QAC inhibits the bacterial growth significally. It has also bactesicid activity on spore form of *P. larvae*. The experiment is extended by cage experiment for toxicity tests on honey bees.