

## A NEW METHOD FOR THE THICKNESS MEASUREMENT OF BACTERIAL BIOFILM

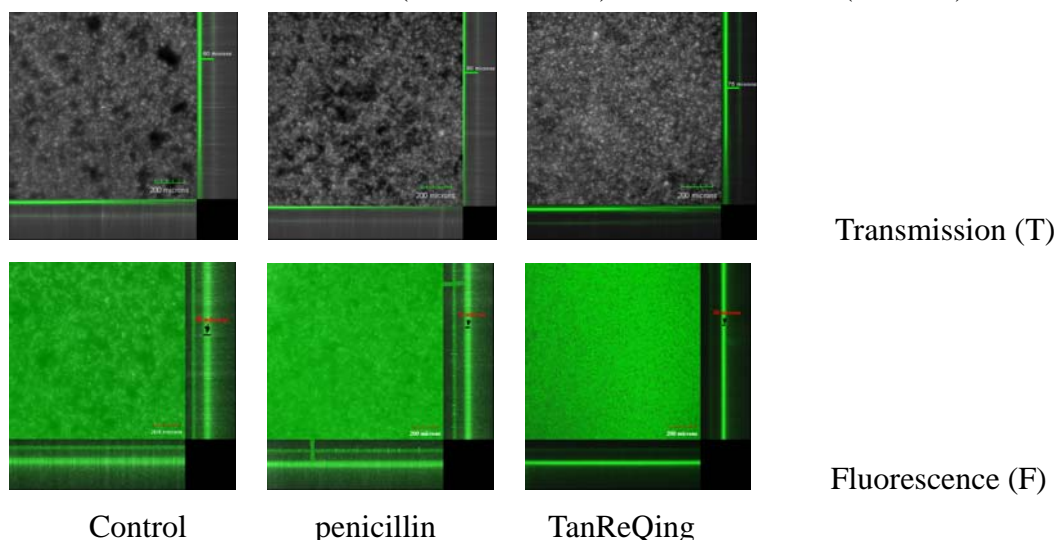
Hu Jianjiang, Wang Yi\*, Lei Hongtao, Hou Yanming

Experimental Research Center, China Academy of Chinese Medical Sciences,  
Dongcheng District, Beijing, 100700, China

E-mail: [jianjianghu1982@yahoo.com.cn](mailto:jianjianghu1982@yahoo.com.cn)

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A biofilm is a complex community of microorganisms that develop on surfaces in diverse environments. The thickness of the biofilm plays a crucial role in the physiology of the immobilized bacteria. It is a three-dimensional architecture, bacterial community forming microcolonies surrounded by a matrix of exopolymers. In this research, Confocal Laser Scanning is used to evaluate both the thickness (whole biomass) and live cell inside the biofilm at same time in live state. *Staphylococcus aureus* biofilm is used as a model, and the effect of Penicillin and TanReQing(TRQ) injection (Traditional Chinese Medicine injection using for biofilm related upper respiratory infections) was observed. WST-8 kit is used for the fluorescence imaging of live cell inside biofilm. Transmission and fluorescence 3D images were obtained at excitation 488nm. 78 optical sections were used to reconstruct each group of biofilm, and the thickness of both transmission(whole biomass) and fluorescence (live cell) were measured.



### Results:

Compared with control group (T:80micron, F: 50micron), Penicillin has no effect on the thickness of whole biomass (T: 80 micron) and weak effect on live cell inside the biofilm (F: 45micron). However, compared with both control and Penicillin group, TRQ has better effect on mature biofilm (T: 75micron F: 30micron). The result showed that this method is reliable, fast and easy to handle, moreover, it shows the live state of biofilm. It should be promising evaluation method in the research of biofilm.

### References:

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