

UV micro Raman studies of *Alicyclobacillus acidoterrestris*

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Alicyclobacillus acidoterrestris is a thermoacidophilic, non-pathogenic spore-forming microorganism, which exhibits extreme resistance to high temperatures and to acidic pH [1,2]. The bacillus is typically detected in spoiled commercially pasteurized apple and orange juice where it may cause significant economic losses to food producers.

Resonance Raman spectra of *Alicyclobacillus acidoterrestris* were recorded on a micro Raman spectrograph exciting with the deep UV laser lines (244 nm, 257 nm) obtained from an intracavity frequency doubled Ar⁺ laser. Additional experiments were performed on a liquid nitrogen cooled stage to prevent thermal damage. Highly resolved spectra from the purine and the pyrimidine bases (A, G, C and T), from the nucleosides and from the monophosphates (AMP, GMP, etc.) were obtained at 4°C from lyophilized sample and in aqueous solution. The characteristic Raman bands obtained from the four nucleosides can be used for a quantitative analysis of the distribution of A, G, C and T in *Alicyclobacillus acidoterrestris*.

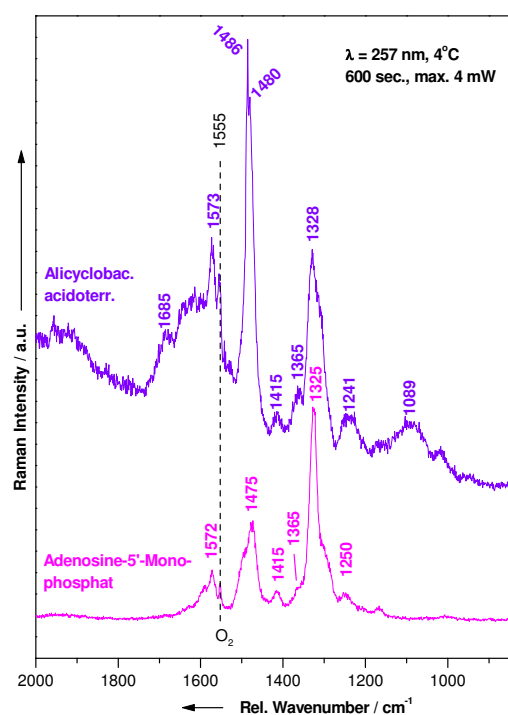


Fig. 1: UV Raman spectrum of *Alicyclobac. terrestris* (top) with dominant contributions from the purine adenosine-5'-monophosphat (bottom).

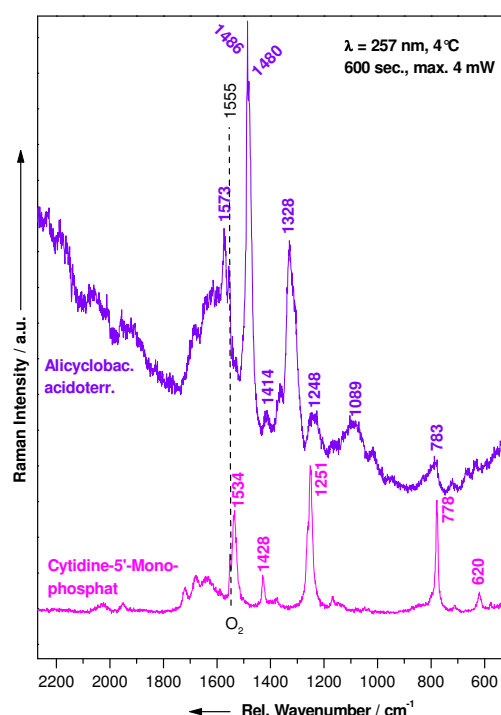


Fig. 2: Contributions from the pyrimidine cytidine-5'-monophosphat (bottom) appear less intense, but distinct in the spectrum of *Alicyclobac. acidoterr.* (top).

[1] G. Cerny, W. Hennlich, K. Poralla, *Z. Lebensm. Unters. Forsch.* **1984**, 179, 224.

[2] F. M. Silva, P. Gibbs, M. C. Vieira, C. L. Silva, *Int. J. Food Microbiol.* **1999**, 51, 95.