DETERMINATION OF POLAR TOXINS IN MOUTHWASH BY A K-BAND MOLECULAR ROTATIONAL RESONANCE (MRR) SPECTROMETER

MEGAN LYNN DO, SYLVESTRE TWAGIRAYEZU, *Chemistry and Biochemistry, Lamar University, Beaumont, TX, USA*.

New analytical tools for monitoring chemical toxins in mouth rinses are highly desired for the development of an improved antiseptic substances and for the reduction of dental problems and tooth diseases. The presence of polar toxins in mouth rinses, however, may lead to unwanted chemical reactions which can degrade quality of mouthwash and its antiseptic capabilities. As part of the efforts to determine the purity of antiseptic substances, a K-Band Molecular Rotational Resonance Spectrometer, which operates at 18-26GHz, has been used to measure small polar toxins in the mouthwash mixture. The analysis of observed MRR spectrum shows a well-resolved rotational structure dominated by ethanol, water and small amount of propane due to the current sensitivity of MRR to polar species in a mouthwash mixture. The present measurements have been further employed to validate K-Band MRR for monitoring ethanol in mouthwash mixture. We notice that MRR maintains its linearity confirming its ability to monitor ethanol in the presence of other polar impurities. The work to improve this analytical method and quantify the amount of each toxins is underway and will be reported in this talk.