

4<sup>th</sup> World Congress on

# MASS SPECTROMETRY

June 19-21, 2017 London, UK

## Distributions of nicotine and cotinine in rat tooth, alveolar bone and brain and their impacts on dental health

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Since nicotine is like a neurotransmitter, with receptors they are involved in many functions in human. Rats were selected to simulate smokers, and distributions of nicotine and cotinine in tooth, alveolar bone and brain are investigated. Quantitative methods by LC-MS/MS are developed after extraction methods were established. Total of 18 SD rats had intraperitoneal injection once a day, and then sacrificed after three months. Tooth, alveolar bone and brain were collected. Analytes and internal standards were extracted from tooth and alveolar bone using SPE procedure. A ground tooth was dissolved in HCl overnight. The analytes were spiked to liquidized tooth or bone for preparing calibration standards and QCs. Then neutralized sample was loaded on SPE, eluent was for analysis. Brain samples were homogenized, extracted using protein precipitation procedure. The LC-MS/MS analysis was carried out on Sciex 5500 LC-MS/MS system. The chromatographic separation was achieved on C18 column (100×2.1 mm) with gradient operation. The MRM transitions on +ESI mode were monitored at m/z 163.1→130.1 for nicotine, m/z 177.1→80.1 for cotinine. Calibration range was from 5 ng/g to 1,000 ng/g. Preliminary results have shown that under dosing of 0.8 mg/kg, the highest distributions are: 19.8 ng/g in teeth, 20.1 in alveolar bone and 11.5 in brain for nicotine, and notably, 25.9 in teeth→58.4 in alveolar bone→103 ng/g in brain for cotinine. Compared to the results from smoker teeth, the impacts on dental health are discussed from cotinine deposition acumination, and as well as brain neuro system.

### Biography

Yong-Xi Li has completed his PhD at Beijing Institute of Petroleum Research in China and Post-doctoral training at Cornell University, USA. Currently, he is Executive Director at Medpace Bioanalytical Laboratories focusing on "Bio-analytical analysis, including TK, PK, ADA and Nab method developments, validations and sample analysis for small molecule, polypeptides, and protein and antibody therapies". He has published more than 100 papers and one book in reputed journals.

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