



Apr 15th, 10:00 AM - 11:00 AM

## Determining the $pK_a$ of Benzoylecognine

David Wong  
*Illinois Wesleyan University*

David N. Bailey, Faculty Advisor  
*Illinois Wesleyan University*

Follow this and additional works at: <https://digitalcommons.iwu.edu/jwprc>

---

Wong, David and Bailey, Faculty Advisor, David N., "Determining the  $pK_a$  of Benzoylecognine" (2000). *John Wesley Powell Student Research Conference*. 26. <https://digitalcommons.iwu.edu/jwprc/2000/posters/26>

This Event is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact [digitalcommons@iwu.edu](mailto:digitalcommons@iwu.edu).

©Copyright is owned by the author of this document.

Poster Presentation 53

**DETERMINING THE  $pK_a$  OF BENZOYLECOGNINE**

David Wong and David N. Bailey\*

Department of Chemistry, Illinois Wesleyan University

The most abundant cocaine metabolite found in the human body is benzoylecognine. To recognize cocaine abuse, gas chromatography/mass spectroscopy is currently used to analyze urine for benzoylecognine. However, GC/MS requires benzoylecognine to be derivitized before analysis, which is expensive. Derivitization is not needed when analyzing by liquid chromatography and therefore is cheaper. Benzoylecognine however is a zwitterion and possesses both a positive charge and a negative charge. This makes benzoylecognine highly soluble in water, making it difficult to extract into a non-polar solvent. Much of this research focuses on the determination of the  $pK_a$  of benzoylecognine in order to isolate it as a singly charged molecule. One of the  $pK_a$ s is determined to be 2.47. Once benzoylecognine is in its positively charged form, it can be complexed with a large negative counter ion. This ion pair can then be extracted into an organic solvent analyzed using liquid chromatography.