

**การพัฒนาวิธีที่ยังผลในการจำแนกชนิดของสารประกอบอินทรีย์ของปรอท (II)
และสารประกอบปรอทอินทรีย์โดยเอชพีแอลซีที่มีเครื่องตรวจวัดโฟโตไดโอดอาร์เรย์**

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**DEVELOPMENT OF AN EFFECTIVE SPECIATION METHOD OF
INORGANIC MERCURY(II) AND ORGANOMERCURY COMPOUNDS BY
HPLC WITH PHOTODIODE ARRAY DETECTOR**



Miss Apinya Tunheng

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย
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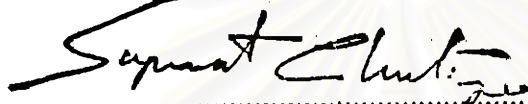
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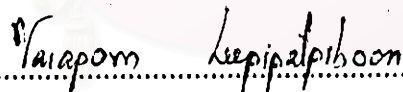


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ในการศึกษานี้ได้เสนอวิธีไฮเพอร์ฟอร์แมนซ์ลิควิดโครมาโทกราฟีที่มีเครื่องตรวจวัดโฟโตไดโอดแอร์เรย์โดยใช้การรวมของคอมเพ็กต์ซิงเจเนตต์และไอออนแพร์ริงเจเนตต์ในเฟสเคลื่อนที่เป็นครั้งแรกในการจำแนกชนิดของปรอทอนินทรีย์(II) เมทิลเมอร์คิวรีและฟีนิลเมอร์คิวรี ได้ศึกษาเฟสเคลื่อนที่ที่มีประสิทธิภาพสองระบบเพื่อการจำแนกชนิด ได้ศึกษาปัจจัยที่เหมาะสมที่สุดที่มีผลต่อการแยกและความไว วิธีนี้สามารถแยกปรอทอนินทรีย์และเมทิลเมอร์คิวรีได้สำเร็จภายในเวลาแปดนาที โดยใช้เมทานอล-น้ำ 12:88 เปอร์เซ็นต์โดยปริมาตรที่มีเทระบิวทิลแอมโมเนียมโบรไมด์ 0.0075 โมลาร์ และเมอร์แคพโทเอทานอล 0.0050 เปอร์เซ็นต์โดยปริมาตรและปรับความเป็นกรดให้มีค่า 3.00 ด้วยแอสซิเดตบัฟเฟอร์ การแยกของปรอทอนินทรีย์ เมทิลเมอร์คิวรีและฟีนิลเมอร์คิวรีสำเร็จได้ภายในเวลาสิบสี่นาที โดยใช้เมทานอล-น้ำ 40:60 เปอร์เซ็นต์โดยปริมาตรที่มีโซเดียมเฮกเซนซัลโฟเนต 0.0040 โมลาร์ และเมอร์แคพโทเอทานอล 0.0040 เปอร์เซ็นต์โดยปริมาตรและปรับความเป็นกรดให้มีค่า 5.00 ด้วยแอสซิเดตบัฟเฟอร์ ค่าเบี่ยงเบนมาตรฐานสัมพัทธ์ทั้งสองระบบมีค่าน้อยกว่าค่าที่ยอมรับได้ของวิธีมาตรฐาน ได้ประเมินค่าขีดจำกัดการวิเคราะห์ของสารประกอบปรอทด้วย

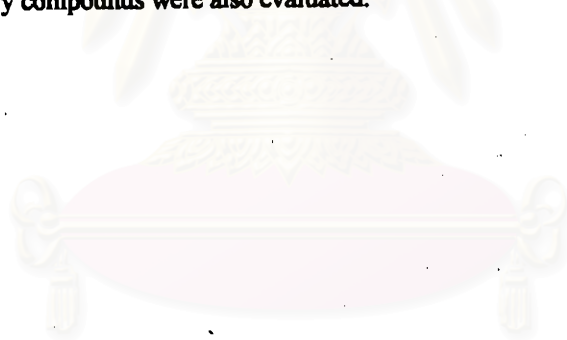
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ลายมือชื่อนิติ อภิญา ดันเฮง
ลายมือชื่ออาจารย์ที่ปรึกษา วราภรณ์
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม

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APINYA TUNHENG : DEVELOPMENT OF AN EFFECTIVE SPECIATION METHOD OF
INORGANIC MERCURY(II) AND ORGANOMERCURY COMPOUNDS BY HPLC WITH
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In this study, high performance liquid chromatography with photodiode array detector was firstly proposed for the speciation of inorganic mercury(II), methylmercury, and phenylmercury using the combination of complexing agent and ion-pairing agent in mobile phase. Two mobile phase systems were investigated as the effective mobile phases for the speciation. The affected parameters on the separation and sensitivity were optimised. Inorganic mercury and methylmercury can successfully be separated within eight minutes using methanol-water (12:88% v/v) buffered with acetate buffer pH 3.00 containing 0.0075M tetrabutylammonium bromide and 0.0050% v/v 2-mercaptoethanol. The separation of inorganic mercury, methylmercury, and phenylmercury can be achieved within fourteen minutes using methanol-water (40:60% v/v) buffered with acetate buffer pH 5.00 containing 0.0040 M sodium hexanesulfonate and 0.0040% v/v 2-mercaptoethanol. The relative standard deviations of both systems were less than the acceptable values of the reference method. The detection limits of mercury compounds were also evaluated.



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ลายมือชื่ออาจารย์ที่ปรึกษา..... อ.นพ. ธีรพงษ์
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

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จุฬาลงกรณ์มหาวิทยาลัย

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