

การเตรียมสารไตแคลเซียมฟอสเฟตไดไฮเดรตจากกระดูกวัวหรือควาย

นางสาว สัณฐิรา ตระการวิจิตร

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

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PREPARATION OF DICALCIUM PHOSPHATE DIHYDRATE FROM CATTLE BONE

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พิมพ์ต้นฉบับบทความวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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การวิจัยครั้งนี้มีจุดมุ่งหมาย เพื่อเตรียมสารไดแคลเซียมฟอสเฟตไดไฮเดรต จากกระดูกวัวหรือควาย โดยการตกตะกอนจากสารละลายกระดูกภายใต้ภาวะที่มีค่าอัตราส่วนจำนวนโมลของธาตุแคลเซียมและฟอสฟอรัส, ค่าความเป็นกรดต่าง และอุณหภูมิที่ต่างกัน เริ่มจากการทำความสะอาดกระดูก กำจัดไขมันโดยการต้ม, เคาแคลไซน์ บดเป็นผง และละลายเป็นสารละลาย สารไดแคลเซียมฟอสเฟตไดไฮเดรตที่เตรียมได้ นำมาสังเคราะห์สารแอลฟาไครแคลเซียมฟอสเฟต

ภาวะที่เหมาะสมที่สุดในการตกตะกอนสารไดแคลเซียมฟอสเฟตไดไฮเดรต ได้แก่ ค่าความเป็นกรดต่าง 4.5-5.5 ที่อุณหภูมิห้อง และอัตราส่วนจำนวนโมลของธาตุแคลเซียมและฟอสฟอรัสไม่มีผลต่อการตกตะกอน และพบว่าสารแอลฟาไครแคลเซียมฟอสเฟต และเบตาไครแคลเซียมฟอสเฟตเท่านั้นที่เป็นผลิตภัณฑ์จากการเคาแคลไซน์ สารไดแคลเซียมฟอสเฟตไดไฮเดรต และแคลเซียมคาร์บอเนตที่ 1200 °C เป็นเวลา 3 ชม.

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The objective of this study was to prepare dicalcium phosphate dihydrate from cattle bone by selective precipitation of bone ash solution under various conditions of Ca/P mole ratio, pH and temperature. The procedure started from cleaning the bone, degreasing by boiling, calcining, milling to bone ash powder and dissolving into solution. The obtained dicalcium phosphate dihydrate was consequently used in the synthesis of alpha-tricalcium phosphate.

The optimum condition for dicalcium phosphate dihydrate was precipitation under pH 4.5-5.5 at room temperature and Ca/P mole ratio had no effect on the precipitation. Alpha-tricalcium phosphate and beta-tricalcium phosphate were the only products from the calcination of dicalcium phosphate dihydrate and CaCO_3 at 1200°C for 3h.

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ลายมือชื่ออาจารย์ที่ปรึกษา.....
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