บทคัดย่อ

การศึกษาสมุนไพรไทยที่มีคุณสมบัติต้านเอดส์

โปรตีนบริสุทธิ์จากเมล็ดมะระพันธุ์ไทย มีชื่อว่า purified *Momordica* protein 29 (MRK 29) มีขนาดน้ำหนักโมเลกุล 29 kD และลำดับกรดอะมิโน 20 ตัวจาก N-terminal ดังนี้ Asp Val Ser Phe Arg Leu Ser Gly Ala Asp Pro Arg Ser Tyr Gly Meth Phe Ile Lys Asp มีคุณสมบัติยับยั้งเอนไซม์ HIV-reverse transcriptase และแสดงแนวโน้มในการเพิ่ม tumor necrosis factor (TNF) เมื่อกระตุ้น macrophage ด้วย lipopolysaccharide MRK 29 สกัดได้จากเมล็ดมะระพันธุ์ไทย ด้วยน้ำเกลือที่ 4°C แยกโปรตีนออกจากสารอื่นด้วยการตกตะกอนด้วยเกลือ ammomium sulfate ที่ 30-60% saturation (0°C) เรียกโปรตีนที่ได้นี้ว่า active protein fraction ซึ่งแสดงคุณสมบัติยับยั้งเอนไซม์ HIV-reverse transcriptase และผลต่อระบบภูมิคุ้มกันเช่นเดียวกันกับ MRK 29 แต่มีคุณสมบัติอ่อนกว่า นำ active protein fraction ไปทำให้บริสุทธิ์โดยวิธี gel filtration chromatography ที่ต่อกับเครื่อง high-pressure liquid chromatography สามารถแยกโปรตีนเด่น (major component) ได้จาก active protein fraction คือ purified *Momordica* protein 29 (MRK 29) ซึ่งมี retention time ประมาณ 29 นาที

Title : A study of Thai medicinal plants with anti-AIDS constituents

Abstract : The seeds of *Momordica charantia* L., indigenous to Thailand, contained *Momordica* protein (MRK 29), with the molecular weight of 29 kD and twenty amino acid sequence from the N terminal being Asp Val Ser Phe Arg Leu Ser Gly Ala Asp Pro Arg Ser Tyr Gly Meth Phe Ile Lys Asp. MRK 29 inhibited HIV-reverse transcriptase and appeared to increase tumor necrosis factor (TNF) from the macrophage which were stimulated by lipopolysaccharide. MRK 29 was isolated from thai *Momordica charantia* L., seeds with ice-cold normal saline solution (0.9% NaCl or 0.15 MNaCl). Other impurities were removed by precipitating the proteins with ammonium sulfate at 30-60% saturation (0°C). The fractionated proteins inhibited HIV-reverse transcriptase and inclined to increase TNF from the stimulated macrophage. The enzyme inhibitory action of the fractionated proteins was somewhat weaker than that of the purified protein (MRK 29). The fractionated proteins was then purified by gel filtration chromatography coupling with hplc system. The purified protein (MRK 29), which was the major component in the active protein fraction, appeared as a single peak on the chromatogram at the retention time about 29 minutes.

ABSTRACT

A study of Thai medicinal plants with anti-AIDS constituents

The seeds of *Momordica charantia* L., indigenous to Thailand, contained *Momordica* protein (MRK 29), with the molecular weight of 29 kD and twenty amino acid sequence from the N terminal being Asp Val Ser Phe Arg Leu Ser Gly Ala Asp Pro Arg Ser Tyr Gly Meth Phe Ile Lys Asp. MRK 29 inhibited HIV-reverse transcriptase and appeared to increase tumor necrosis factor (TNF) from the macrophage which were stimulated by lipopolysaccharide. MRK 29 was isolated from thai *Momordica charantia* L., seeds with ice-cold normal saline solution (0.9% NaCl or 0.15 MNaCl). Other impurities were removed by precipitating the proteins with ammonium sulfate at 30-60% saturation (0°C). The fractionated proteins inhibited HIV-reverse transcriptase and inclined to increase TNF from the stimulated macrophage. The enzyme inhibitory action of the fractionated proteins was somewhat weaker than that of the purified protein (MRK 29). The fractionated proteins was then purified by gel filtration chromatography coupling with hplc system. The purified protein (MRK 29), which was the major component in the active protein fraction, appeared as a single peak on the chromatogram at the retention time about 29 minutes.

คำอธิบายสัญลักษณ์และคำย่อ

3Tc	=	Lamivadine, nucleoside analague
aq.	=	aqueous
ext.	=	extract
EtOH	=	ethanol
H_2O	=	water
HIV-1	=	human immunodeficiency virus type-1
HIV-2	=	herpes simplex virus type-2
Hela	=	human cervical carcinoma
IVA	=	influenza A virus
KB	=	human nasopharynx carcinoma
LEUK-P388	=	murine lymphocytic leukemia
MeOH	=	methanol
NRTI	=	nucleoside reverse transcriptase inhibitor
NNRTI	=	non-nucleoside reverse transcriptase inhibitor
RDV	=	Ranikhet disease virus
RT	=	reverse transcriptase
VV	=	vaccinia virus

CA Ehrlich ascites
CA-FM3A
GLC
LEUK-K562
LEUK-P815
Lymphoma-YAC-1
MRC-5
SGC
= cancer cell lines

NS = not specified