

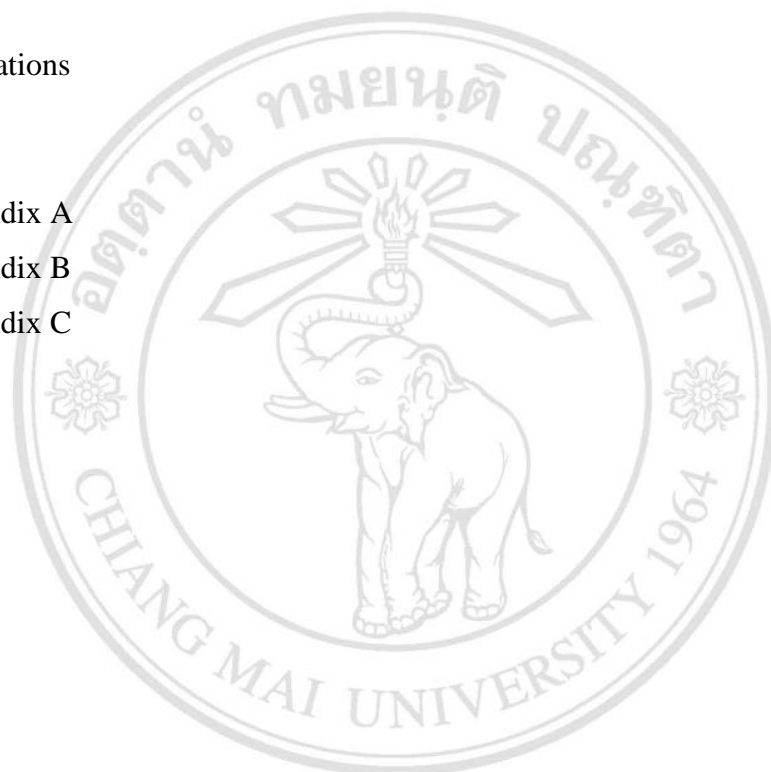
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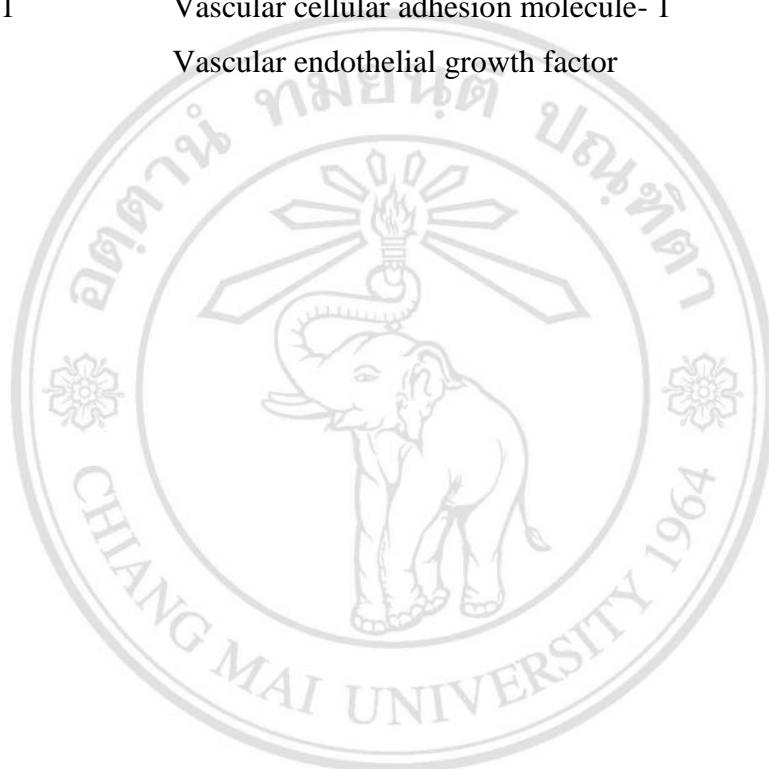
LIST OF ABBREVIATIONS

%	Percent
°C	Degree Celsius
nm	Nanometer
mg	Milligram
min	Minute
mL	Millilitre
nm	Nanometer
mM	Millimolar
mRNA	Messenger RNA
MW	Molecular weight
µg	Microgram
µM	Micromolar
µm	Micrometer
µl	Micro liter
v/v	Volume by volume
w/v	Weight by volume
AP1	Activated protein 1
APS	Ammonium persulphate
BSA	Bovine serum albumin
CaCl ₂	Calcium chloride
CE	Catechin
CEE	Crude ethanolic extract
cm ²	Square centimeter
COX-2	Cyclooxygenase-2
CO ₂	Carbon dioxide
DCM	Dichloromethane
DF	Dilution Factor

DI water	Deionized water
DNA	Deoxyribonucleic acid
DMAP	4-Dimethylaminopyridine
DMEM	Dulbecco's Modified Eagle's Medium
DMSO	Dimethyl sulfoxide
ECM	Extracellular matrix
EDTA	Ethylenediaminetetraacetic acid
ELISA	Enzyme-linked immunosorbent assay
EMSA	Electrophoretic mobility shift assay
ERK1/2	Extracellular Signal-Regulated Kinases 1 and 2
EtOAc	Ethyl acetate
FBS	Fetal bovine serum
g	Gram
GA	Gallic acid
h	Hour
HCl	Hydrochloric acid
HEPES	N-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid
Hex	Hexane
HPLC	High Performance Liquid Chromatography
HIF-1 α	hypoxia-inducible factor-1alpha
ICAM-1	Inter-Cellular Adhesion Molecule 1
IC20	Inhibitory concentration at 20% growth
IC50	Inhibitory concentration at 50% growth
IgG	Immunoglobulin G
IKK	I κ B kinase
iNOS	Inducible nitric oxide synthase
IFN- γ	Interferon-gamma
I κ B α	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha
JNK	Jun N-terminal Kinase
KCl	Potassium chloride

kDa	Kilodalton
KH ₂ PO ₄	Potassium dihydrogen phosphate
MMP	Matrix metalloproteinase
MT-MMP	Membrane type-matrix metalloproteinase
MTT	3-(4,5 dimethylthiazole-2yl)-2,5 diphenyltetrazolium bromide
NaOH	Sodium hydroxide
NaCl	Sodium chloride
NaHCO ₃	Sodium bicarbonate
NaH ₂ PO ₄	Dibasic sodium phosphate
Na ₂ HPO ₄	Monobasic sodium phosphate
NF-κB	Nuclear factor kappa B
NO	Nitric oxide
IL	Interleukin
LPS	Lipopolysaccharide
PI3K	Phosphoinositide-3 kinase
PAI-1	Plasminogen activator inhibitor-1
PAI-2	Plasminogen activator inhibitor-2
PAGE	Polyacrylamide gel electrophoresis
PBS	Phosphate buffer saline
pH	Power of Hydrogen ion
RES	Reticuloendothelial system
S.D.	Standard derivation
SDS	Sodium dodecyl sulfate
SDS-PAGE	Sodium dodecyl sulfate-polyacrylamide gel electrophoresis
STAT3	Signal transducer and activator of transcription 3
TCA	Trichloroacetic acid
TEMED	N,N,N,N-tetramethyl ethylene-diamine
TAC	Total anthocyanin content
TFC	Total flavonoid content
TPAC	Total proanthocyanidin content
TPC	Total phenolic content

THF	Tetrahydrofuran
TIMPs	Tissue inhibitors of metalloproteinases
TNF	Tumor necrosis factor
Tris-base	Tris-(hydroxymethyl aminomethane)
uPA	Urokinase plasminogen activator
uPAR	Urokinase plasminogen activator receptor
VCAM-1	Vascular cellular adhesion molecule- 1
VEGF	Vascular endothelial growth factor



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LIST OF SYMBOLS

α	Alpha
β	Beta
γ	Gamma
δ	Delta
κ	Kappa



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ข้อความแห่งการริเริ่ม

- 1) การยับยั้งแพร่กระจายของเซลล์มะเร็งจากสารสกัดข้าวแดง (ส่วนสกัดเอทานอล เฮกเซน ไดคลอโรมีเทน เอทิลอะซิเตท และน้ำ) ในเซลล์มะเร็งมนุษย์ชนิดรุกรานชนิด HT1080 และ MDA-MB-231 โดยพบโปรแอนโธไซยานินิน แกมมาโทโคไตรอินอลและแกมมาออริซานอลเป็นส่วนประกอบหลักในส่วนสกัดเอทานอล เฮกเซน ไดคลอโรมีเทน และน้ำ โดยสารกลุ่มนี้สามารถยับยั้งการแพร่กระจายของเซลล์มะเร็งได้โดยยับยั้งการหลั่งและการทำงานของเอนไซม์เมทริกซ์เมทาโลโปรตีนเนสชนิดที่ 2 และ 9 ได้
- 2) การแยกส่วนสกัดโปรแอนโธไซยานินิน (PRFR) จากสารสกัดข้าวแดงโดยใช้เซฟาเด็กซ์แอลเอช 20 พบว่าส่วนสกัด PRFR ส่งผลต่อการทำงานและการแสดงออกของโปรตีนที่เกี่ยวข้องกับการรุกรานของเซลล์มะเร็งโดยส่งผลต่อ NF-KB และส่งผลให้ยับยั้งการรุกรานของเซลล์มะเร็งเต้านมมนุษย์ได้

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STATEMENT OF ORIGINALITY

1. The anti-invasive properties of red rice extract fractions (CEE, Hex, DCM, EtOAc and water fraction) on HT1080 and MDA-MB-231 cell invasion. The proanthocyanidin γ -oryzanol and γ -tocotrienol also detectable in the CEE, Hex, DCM and water fractions. These compounds have been showed an anti-invasive property via decrease the secretion and activities of MMP-2 and MMP-9.
2. To isolate the proanthocyanidin enrich fraction (PRFR) from red rice by Sephadex LH-20, and examine whether this PRFR altered the activities and the expression levels of invasion-associated proteins, potentially by targeting NF- κ B, which leading to inhibit MDA-MB-231 breast cancer cell invasion.



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