

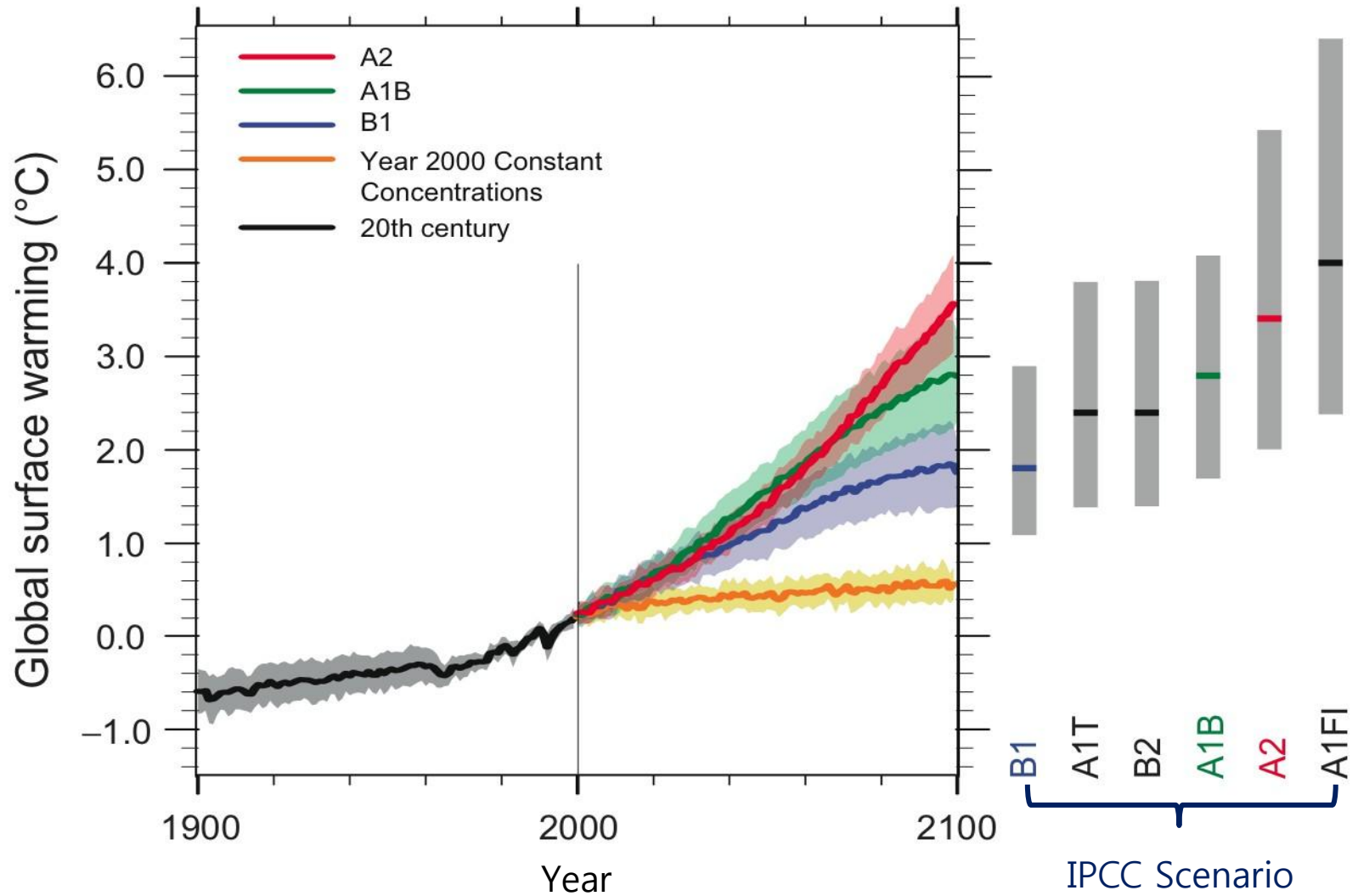
To evaluate adaptation and use tropical & subtropical germplasm of vegetables for climate changing

2013. 3. 26

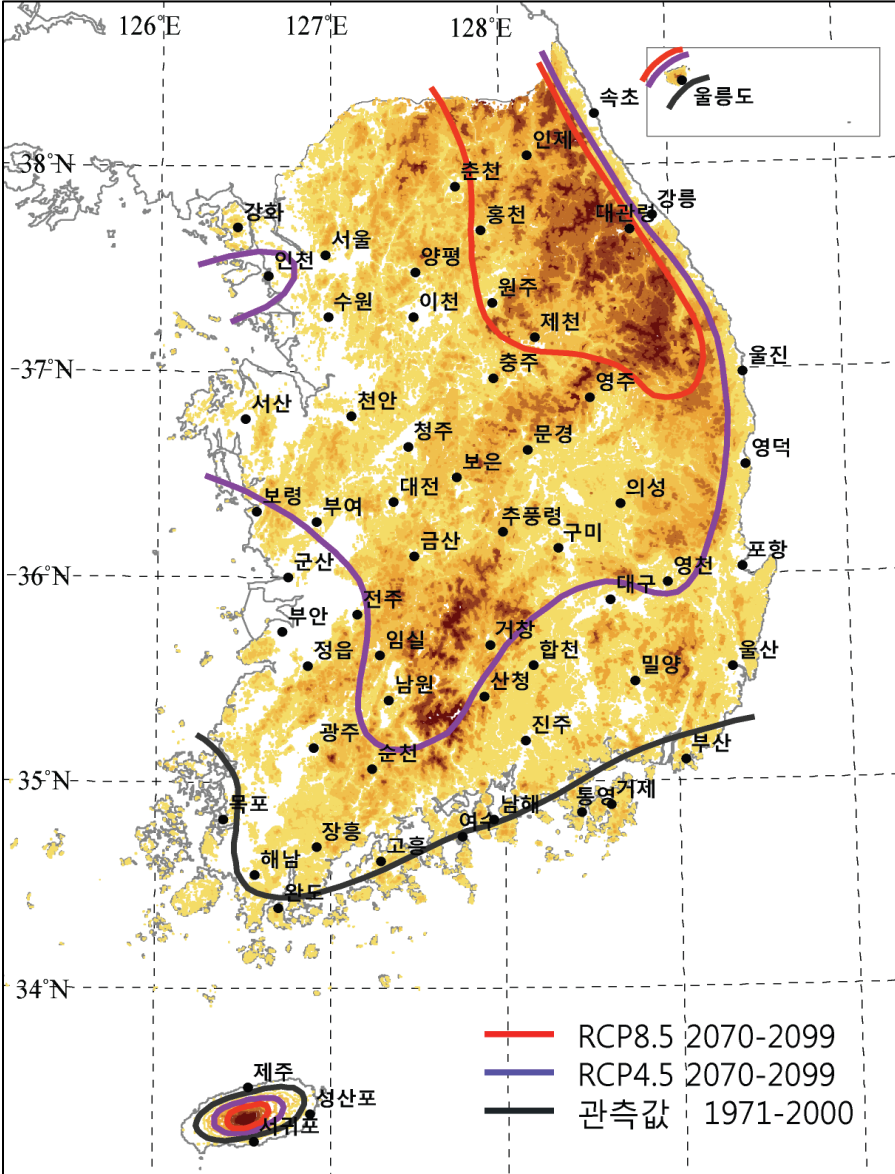
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IPCC Scenario of Global Warming



IPCC Scenario in Korea



Introducing Tropical & Subtropical Vegetables in Korea

Objective :

- 1. Adaptive : weather, soil**
- 2. Functional**
- 3. Profitable**

Collect Germplasm of Vegetables from Tropical & Subtropical Region : 40s crops

Leafy Vegetables : Amaranth, Indian spinach,...

Fruit Vegetables : Tamarillo, Gac, Chayote, Okra,

Root Crops : Apios, Vine Yam, Yambean,.....

Aromatic Crops : Tumeric, Vietnam Coriander,.....

Select Vegetables from Tropical & Subtropical Region for Market



Globe Artichoke

Native : Mediterranean Basin
Contain: Cynarin

<Medical Virtues>
Control Diabets,
Hepatoprotective,
Lipid-lowering,
Alleviate Pain,...

Okra

Native : Northern Africa

Contain: Mucin

<Medical Virtues>
Control Diabets,
Lipid-lowering,



Bitter Gourd

Native : Northern Africa

Contain: Momorodecin

<Medical Virtues>
Control Diabets,
Lipid-lowering,



Yard Long Bean

Native : Northern Africa(Now Southeast Asia)

Contain: VitainA,C
and folates



Problems

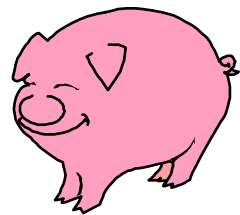
- Finding the Markets : too small



How to Make a Solution

- Using Phenolic Compounds to make new merchandises

Proposed mechanisms of lipid peroxidation by active oxygen



Fatty

Active Oxygen

Superoxide O_2^-

Singlet oxygen 1O_2

Hydroxyl radical $\cdot OH$

Alkoxy radical $RO\cdot$

Peroxy radical $ROO\cdot$

Lipid Peroxidation

Formaldehyde

Acetaldehyde

Acrolein

Glyoxal

Methylglyoxal

Malonaldehyde

Secondary Oxidation products

Diseases

Diseases by Oxidation products

- Alzheimer
- Cancer
- Diabetes
- Inflammation
- Parkinsonism
- Immunodeficiency
- Aging...

Antioxidation by Phenolic compounds

Active Oxygen

Superoxide O_2^-

Singlet oxygen 1O_2

Hydroxyl radical $\cdot OH$

Alkoxy radical $RO\cdot$

Peroxy radical $ROO\cdot$

Lipid Peroxidation

Antioxidation
Phenolic compounds

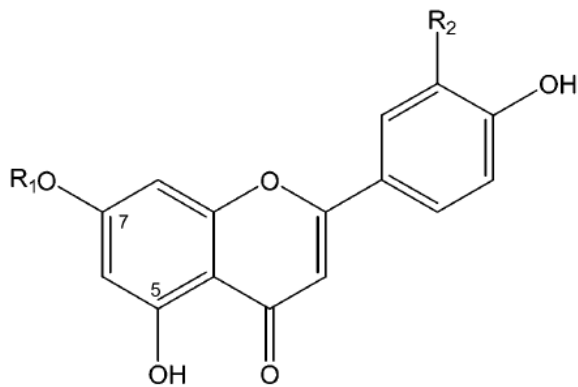
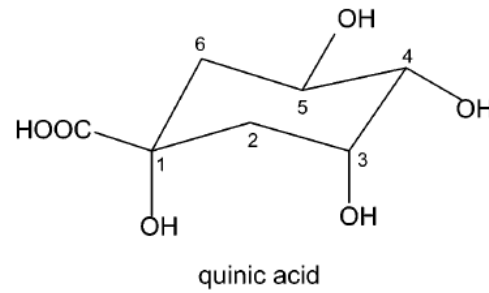
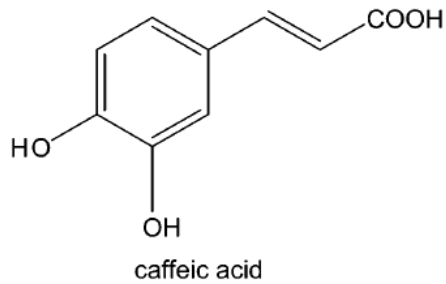
Formaldehyde
Acetaldehyde
Acrolein
Glyoxal
Methylglyoxal
Malonaldehyde

Globe Artichoke

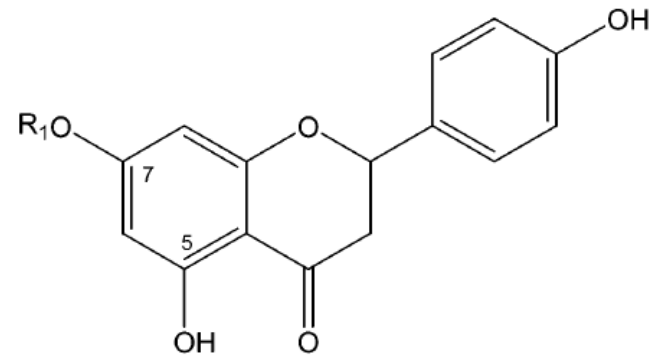
○ 학명 : *Cynara scolymus* L.



Phenolic compounds from leaves of globe artichoke

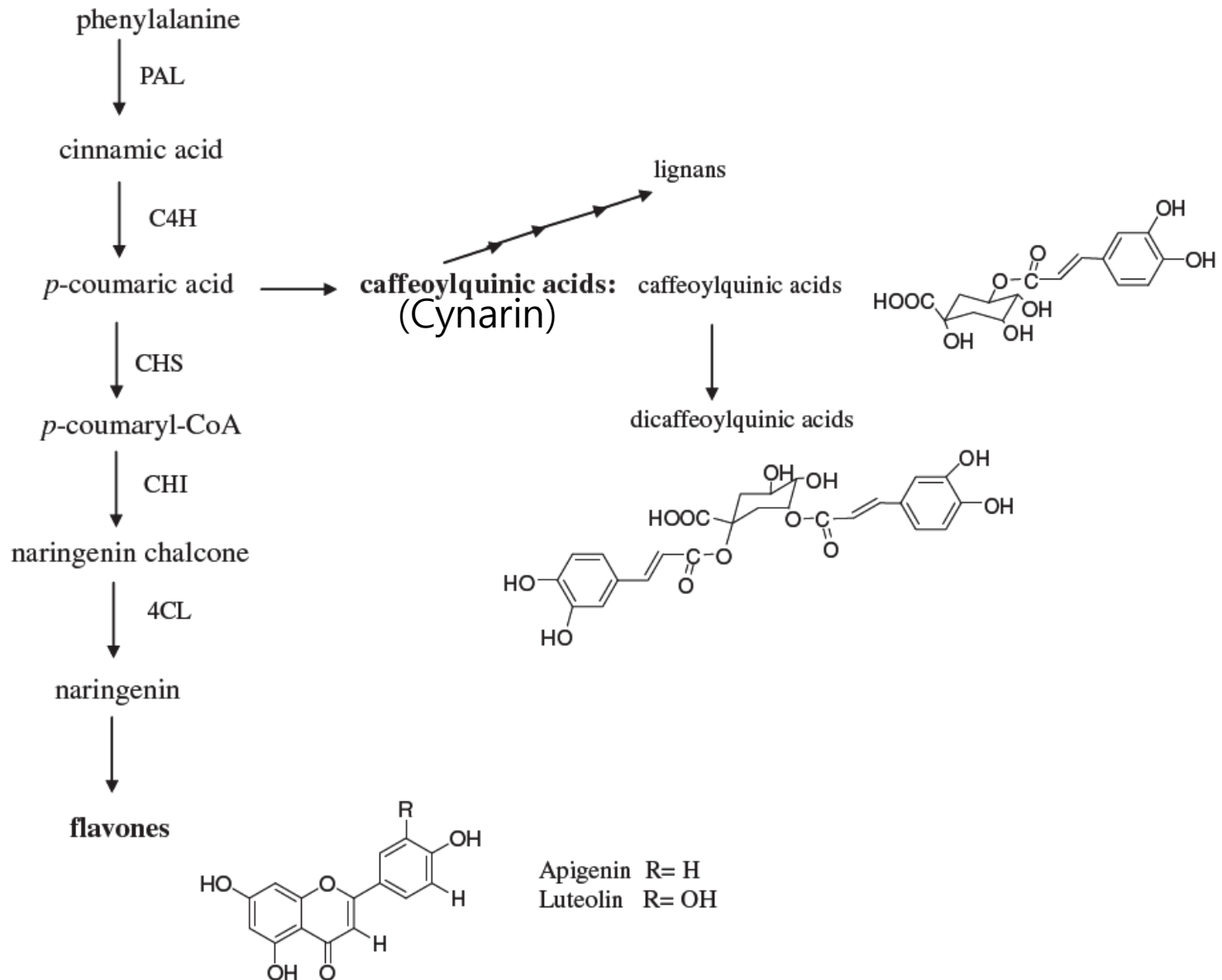


luteolin 7-O-rutinoside:	R ₁ = rut	R ₂ = OH
luteolin 7-O-glucoside:	R ₁ = glc	R ₂ = OH
apigenin 7-O-rutinoside:	R ₁ = rut	R ₂ = H
apigenin 7-O-glucoside:	R ₁ = glc	R ₂ = H



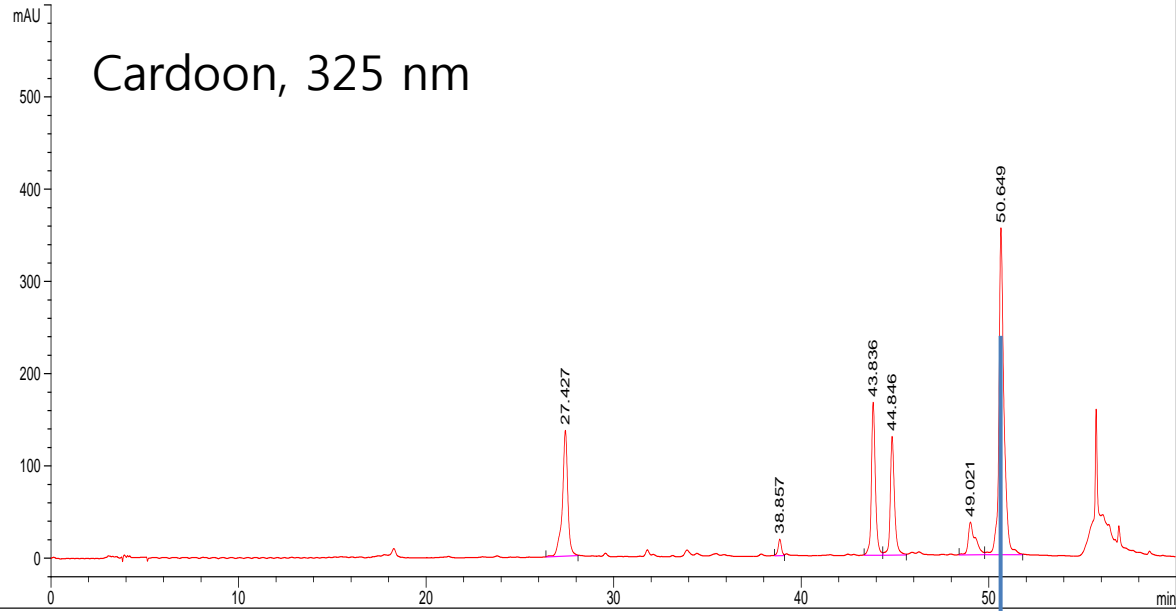
naringenin:	R ₁ = rut
naringenin 7-O-glucoside:	R ₁ = glc

Biosynthesis pathway of Cynarin



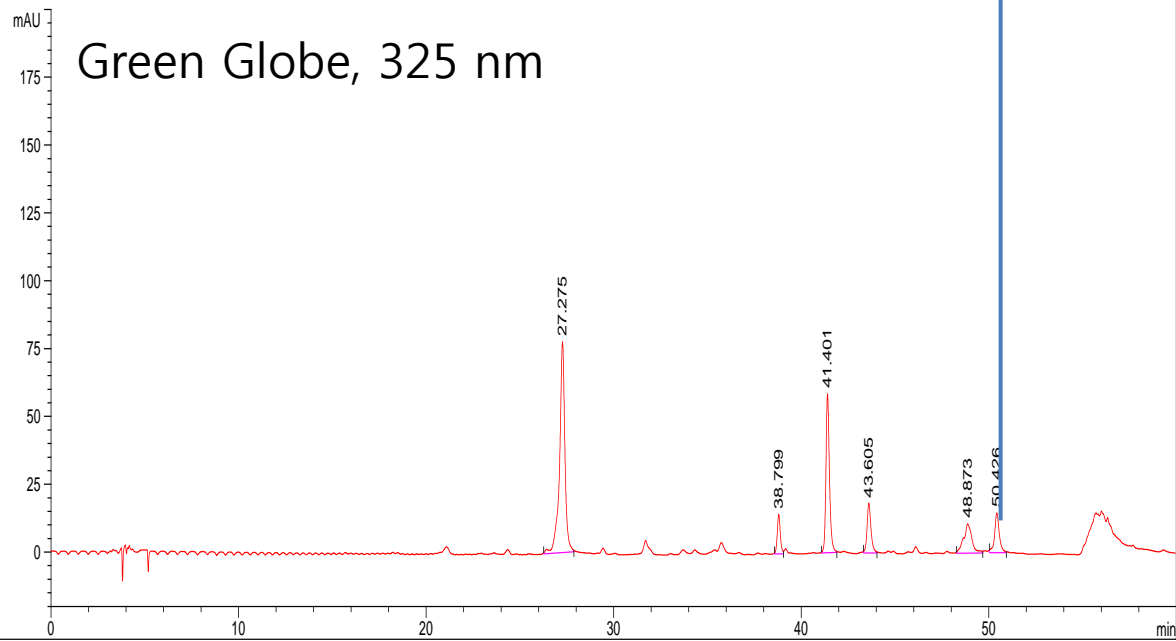
DAD1 B, Sig=325,8 Ref=off (CQA\01200001.D)

Cardoon, 325 nm

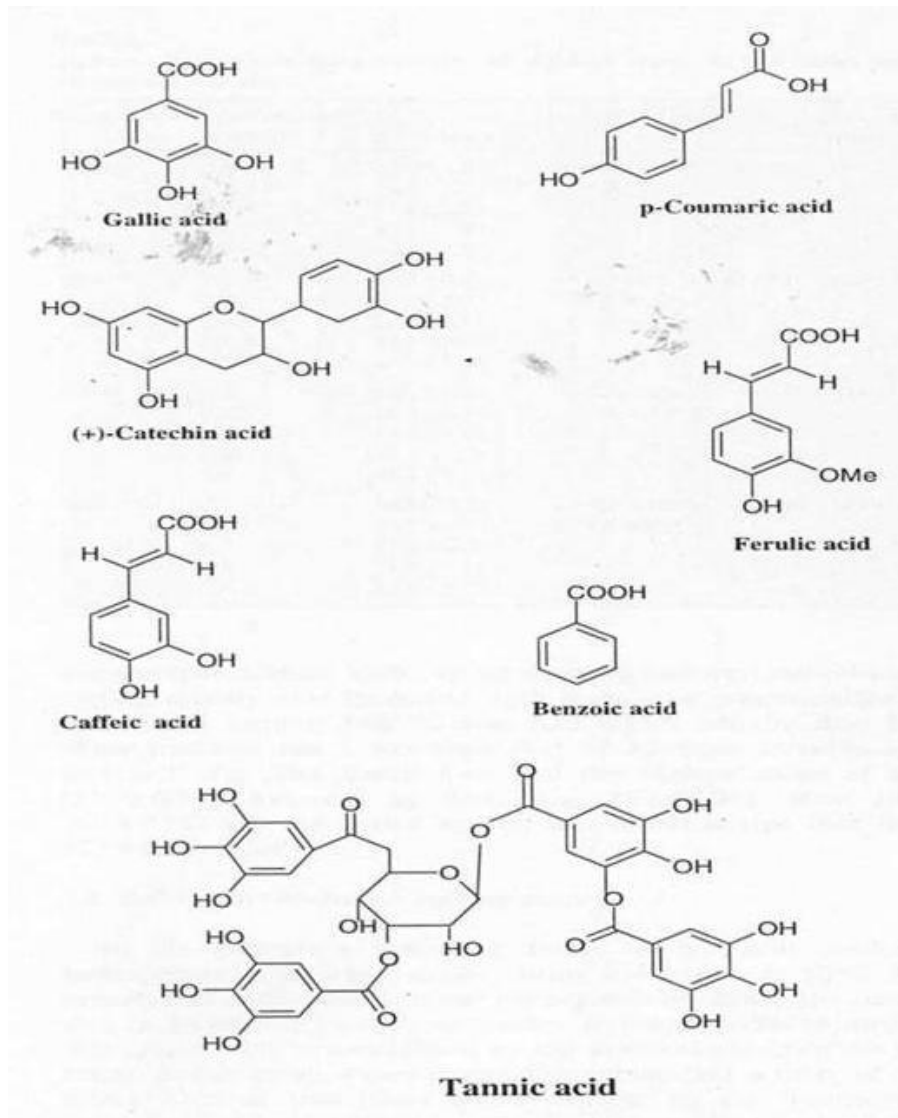


DAD1 B, Sig=325,8 Ref=off (CQA\01200002.D)

Green Globe, 325 nm



Phenolic compounds from Bitter Gourd



OKRA TEA

Okra seeds	Phenolic Compounds (mg/g, chlorogenic acid)
Roasted	12.61 ± 0.20
Unroasted	2.54 ± 0.02



Pods

Seeds



Roasted Seeds

Okra Tea





Materials of Kimchi

Have Chili Pepper, Garlic, Cabbage ever been Native in the Korean Peninsula ?





THANK YOU !

