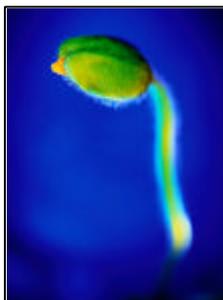


Natural Plant Chemicals I

Sung-Yong H. Yoon, Ph.D.



20

가

가

가

가

category

?

...

...

(ornamental)

chemical compound,

(secondary metabolite)

가 가

가 metabolic pathway



가

가

가

?

(,)

(plant secondary metabolite compound)

3.5~4%

Medicinal herb product market

가 1997

US\$14 billion

, 1998

US\$

3.866 billion

(United Nations International Trade

Natural Plant Chemicals I

Yearbook,1999).

25%

Rhone-Poulenc Rorer, Hauser Chemical Research, NaPro Bio
Therapeutics, ChiRex, Polysciences, Xechem, Towers Phytochemical,
Phytogen Life Sciences

가 taxol

가

가

가

가

가

nicotine, pyrethrin, rotenone steroid, alkaloid, terpenoid

chemical compound

Steroidal
sapogenin, Digitalis glycoside, Catharathus alkaloids, belladonna alkaloid
(

atropine, hyoscyamine, scopolamine), cocaine, colchicines,

opium alkaloid (codeine, morphine,

papaverine), physostigmine, pilocarpine,

quinine, quinidine, reserpine, d-

tubocurarine, taxol



pharmacological tool

Euphorbia

diterpene ester

가

가 pound

가

가 range

opium alkaloid,

codeine

morphine pound \$400~\$600 가pound
 ? ... kg \$650~\$1250 가
 가 ? Rose oil
 essential(volatile) oil \$2000~\$3000/Kg 가 , phorbol ester
 \$2000/g(kg), Catharanthus alkaloid \$5000/g 가
 essential oil

Table1. Common uses for selected essential oils (*RIRDC Reports, 2001*)

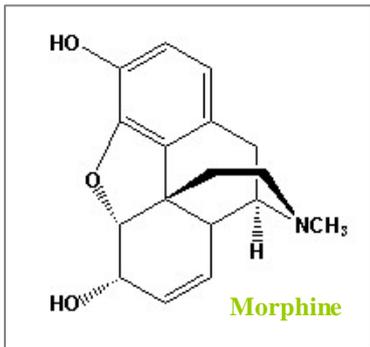
Essential oil	Common uses
Citrus	Industrial solvents, fragrance for cleaning products, flavoring
Spearmint	Toothpaste, mouthwash, confectionery flavoring
Peppermint	Toothpaste, mouthwash, chewing gum, food flavoring, cosmetics, tobacco flavoring
Lavender/lavandin	Fragrances, toiletries
Eucalyptus	Cough/cold remedies, solvents, cleaning agents, flavoring
Tea tree	Toiletries, insect repellents, germicides, cosmetics
Boronia	Food flavoring, fragrance
Blackcurrant bud	Food and beverage flavoring

Table2. World trade in essential oils, perfumes and flavours (*RIRDC Report, 2001*)

	1986	1990	1994	1998	1986-1998
	US Million \$	US Million \$	US Million \$	US Million \$	%
Exports	2149	4122	5051	7435	10.9
Imports	2008	4206	4802	6811	10.7

. Morphine ?
 standard compound
 가

Natural Plant Chemicals I



alkaloid
(venous tone)

· morphine opium

3~5

20

3

가

· morphine

4000

· acute pain chronic pain

· fentanyl morphine

? Morphine

· MOR (opioid receptor)

가

· morphine

· m/s (market share)

· marketing

· Ardent

· patch

· slow-release morphine

· fentanyl

· 900,000

· 800,000

· 가

· morphine fentanyl

· US\$ 2billion 25%

· 10%

· 가 가

(Pharmacoproject, 1997)

Table3. morphine

Morphine	Duragesic	Jassen	20	US\$ 230 million (M/S 11%)
Fentanyl	Continus	Mundi, Int.	20	US\$ 250 million (M/S 13%)
Narcotic Analgesic Market			40	US\$ 2 billion (G/R 10%)

Natural Plant Chemicals I



center
 chiral
 가
 가
 가 (vanillin, ephedrine, caffeine)
 가
 가 Taxol
 가
 가 Plant insecticide
 azadirachtin
 가
 ?
 compound steam distillation
 extraction 2000
 condensed tannin, polysaccharide , biopolymer,
 가 ?
 ? ^^*
 가
 250,000~750,000 5~15% screening
 compound
 가 ... screening
 Institute) NCI(National Cancer
 program screening
 taxol, camptothecin
 screening
 promising
 가
 가