

TRAIL

Extrinsic pathway

Intrinsic pathway

DcR2

DR4/DR5

DcR1

DNA-damaging agents

Procaspase-8/10

FADD

c-FLIP

Bid

Bcl-2 / Bcl-XL / Mcl-1

P53

Caspase-8/10

tBid

Bax / Bak

Cytochrome C

APOPTOSOME

Apaf-1

Procaspase-9

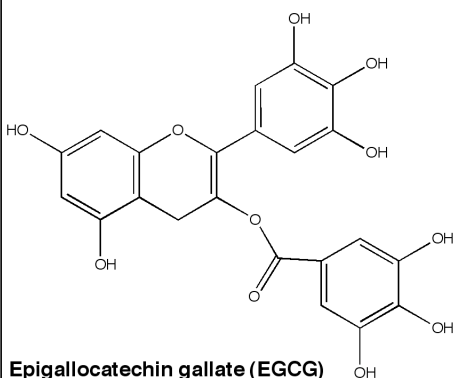
XIAP / cIAP-1 / cIAP-2 / Survivin

Caspase-3

APOPTOSIS

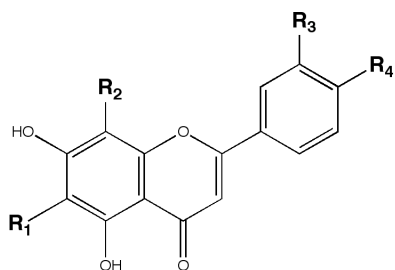
A. Flavanoids:

Flavanols (Catechins)



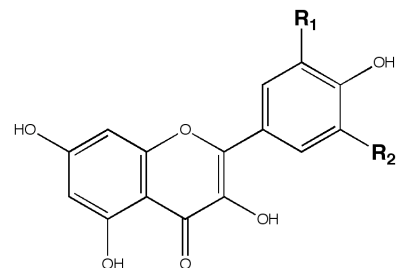
Epigallocatechin gallate (EGCG)

Flavones



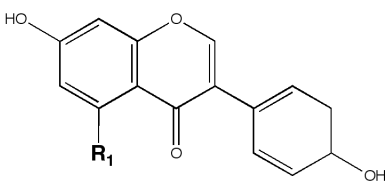
R₁= H ; R₂= H ; R₃= OH ; R₄= OH **Luteolin**
R₁= H ; R₂= H ; R₃= H ; R₄= OH **Apigenin**
R₁= H ; R₂= OCH₃ ; R₃= H ; R₄= H **Wogonin**
R₁= OH ; R₂= H ; R₃= H ; R₄= H **Baicalein**

Flavonols



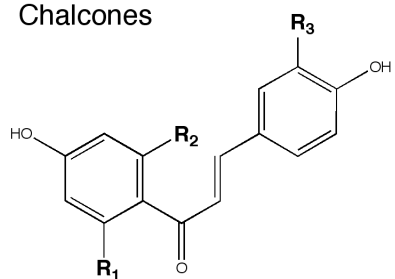
R₁= OH ; R₂= H **Quercetin**
R₁= H ; R₂= H **Kaempferol**
R₁= OH ; R₂= OH **Myricetin**

Isoflavones



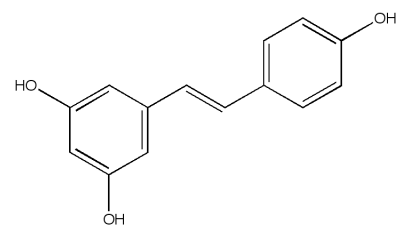
R₁= OH **Genistein**
R₁= H **Daidzein**

Chalcones



R₁= OH ; R₂= H ; R₃= OH **Butein**
R₁= H ; R₂= OH ; R₃= H **Isoliquiritigenin**

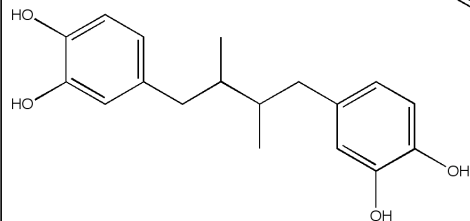
B. Stilbenes:



Resveratrol

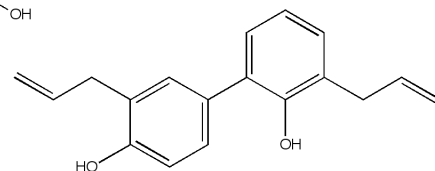
C. Lignans / Flavonolignans:

Nordihydroguaiaretic acid (NDGA)

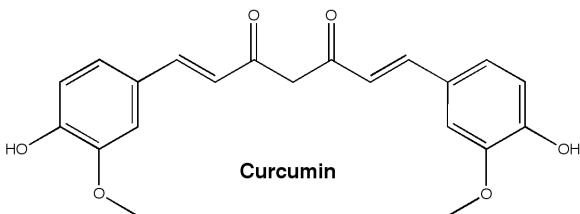


Silibinin

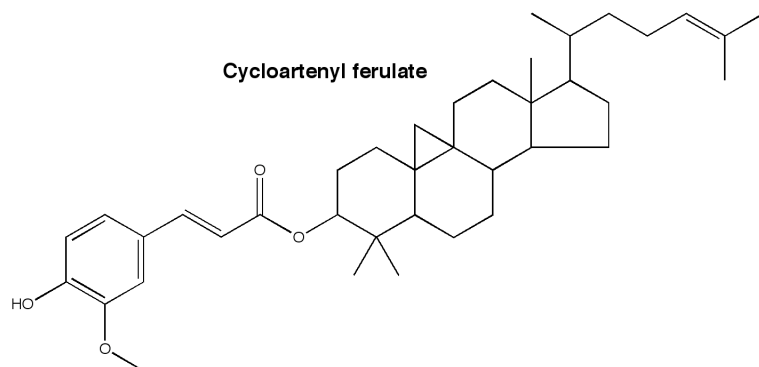
Honokiol



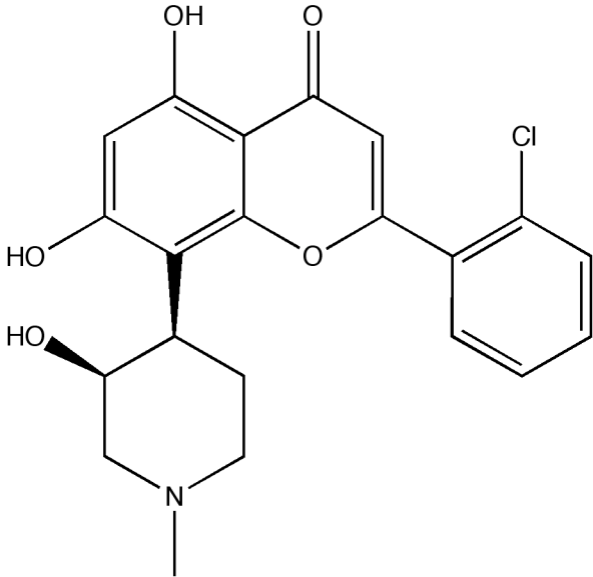
D. Phenolic acids and derivatives:



Curcumin

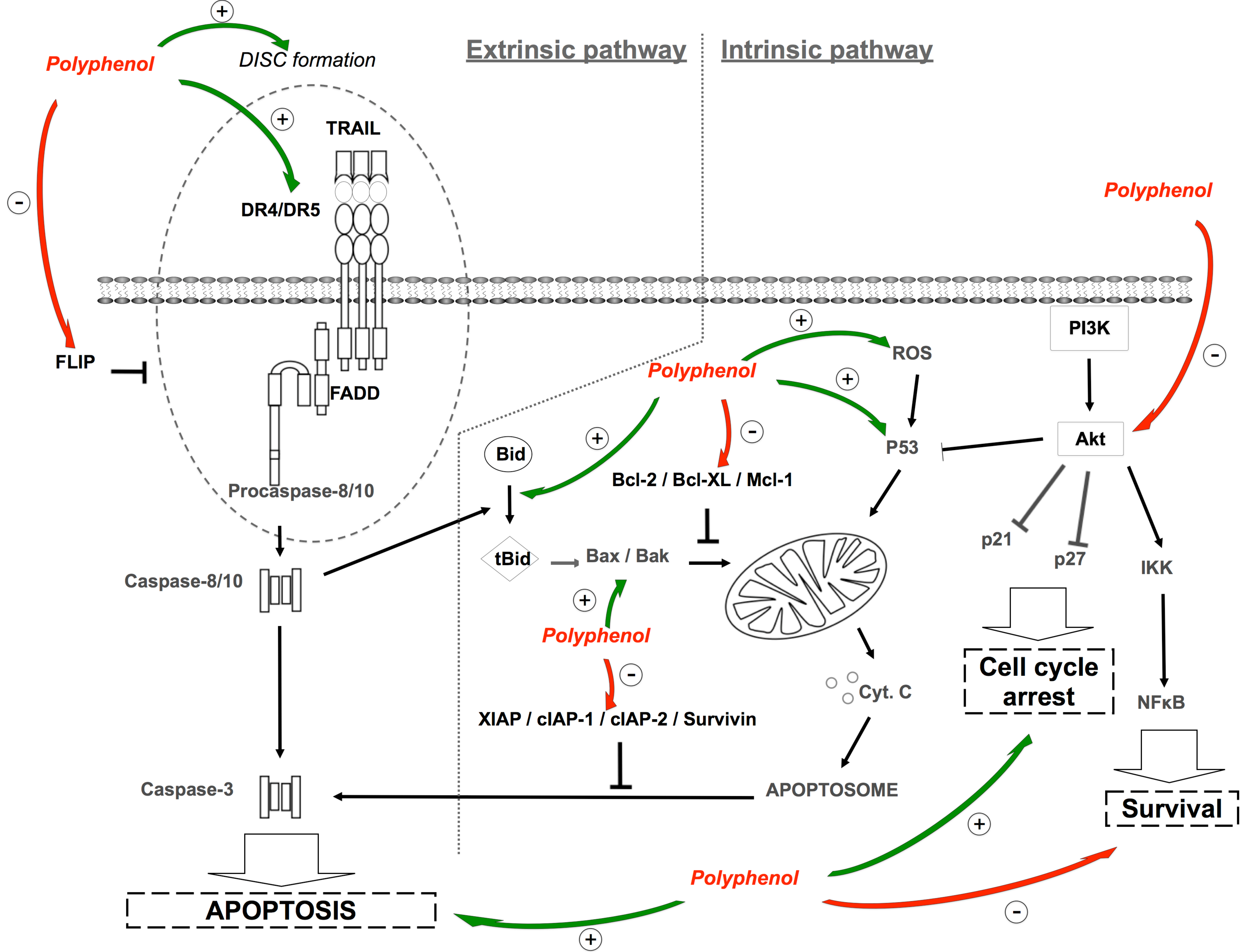


Cycloartenyl ferulate



Extrinsic pathway

Intrinsic pathway



Polyphenol

DISC formation

TRAIL

DR4/DR5

FADD

Procaspase-8/10

FLIP

Caspase-8/10

Caspase-3

APOPTOSIS

Bid

tBid

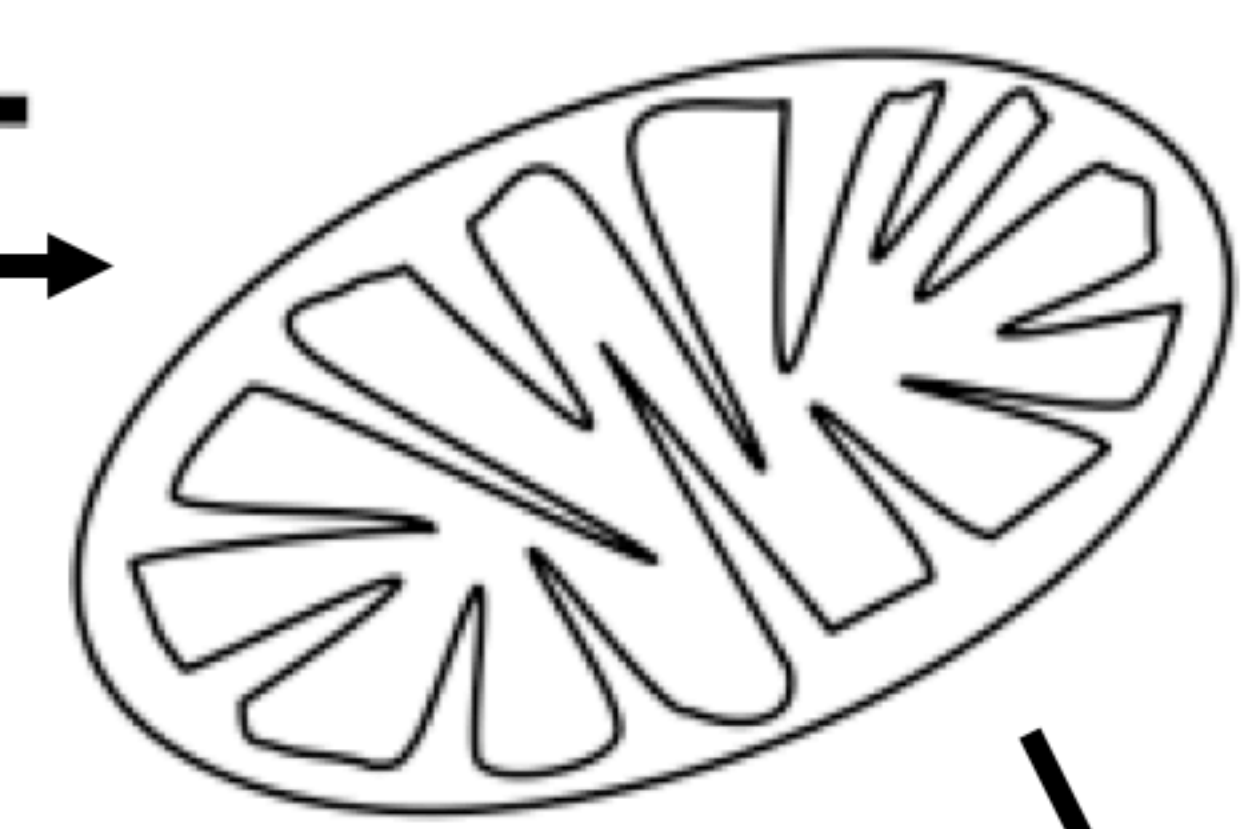
Bax / Bak

Polyphenol

XIAP / cIAP-1 / cIAP-2 / Survivin

+

Bcl-2 / Bcl-XL / Mcl-1



Cyt. C

APOPTOSOME

Polyphenol

ROS

P53

PI3K

Akt

p21

p27

IKK

Cell cycle arrest

NFκB

Survival

Polyphenol

+

-