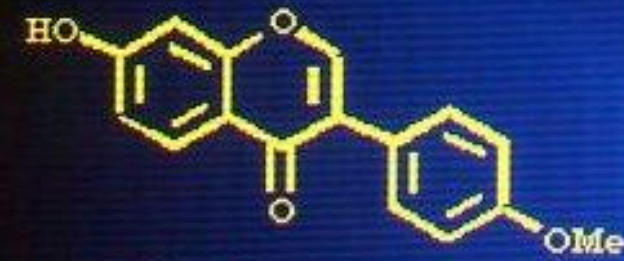
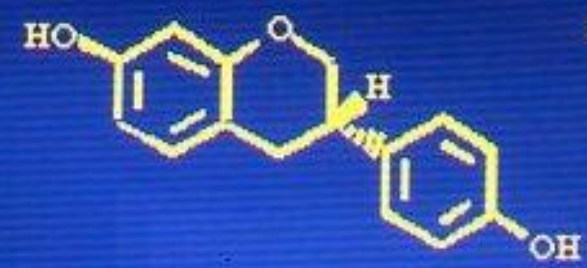


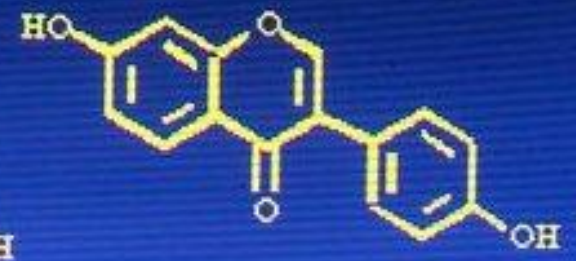
# NATURAL ISOFLAVONES



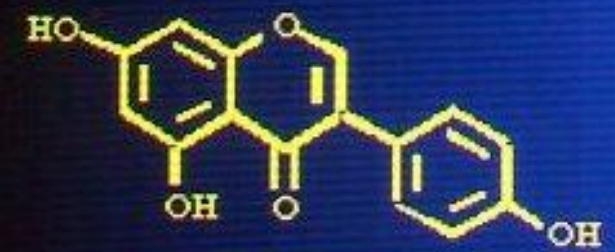
FORMONONETIN



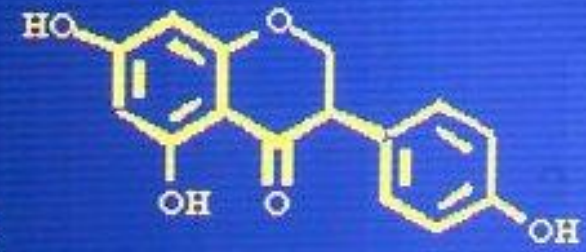
EQUOL



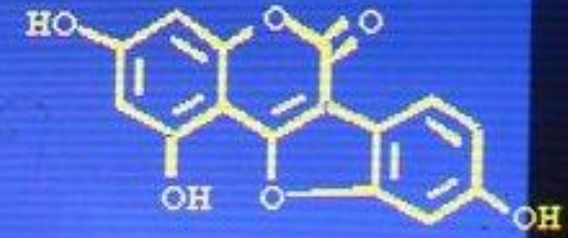
DAIDZEIN



GENISTEIN



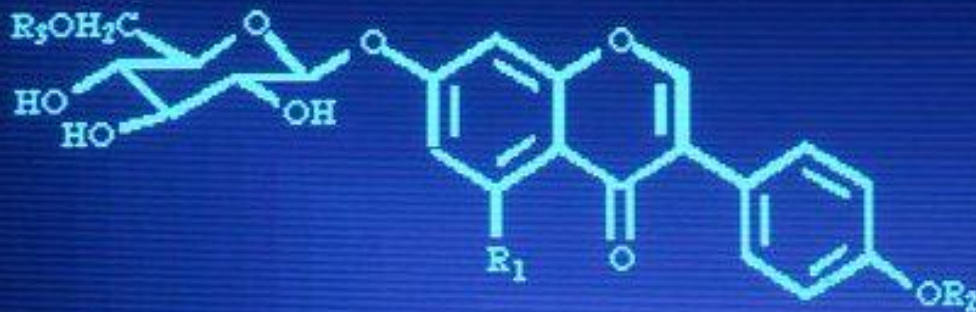
BIOCHANIN A



COUMESTROL



# NATURAL GLUCOSIDES



$R_1 = R_2 = R_3 = H$  DAIDZIN

$R_1 = OH, R_2 = R_3 = H$  GENISTIN

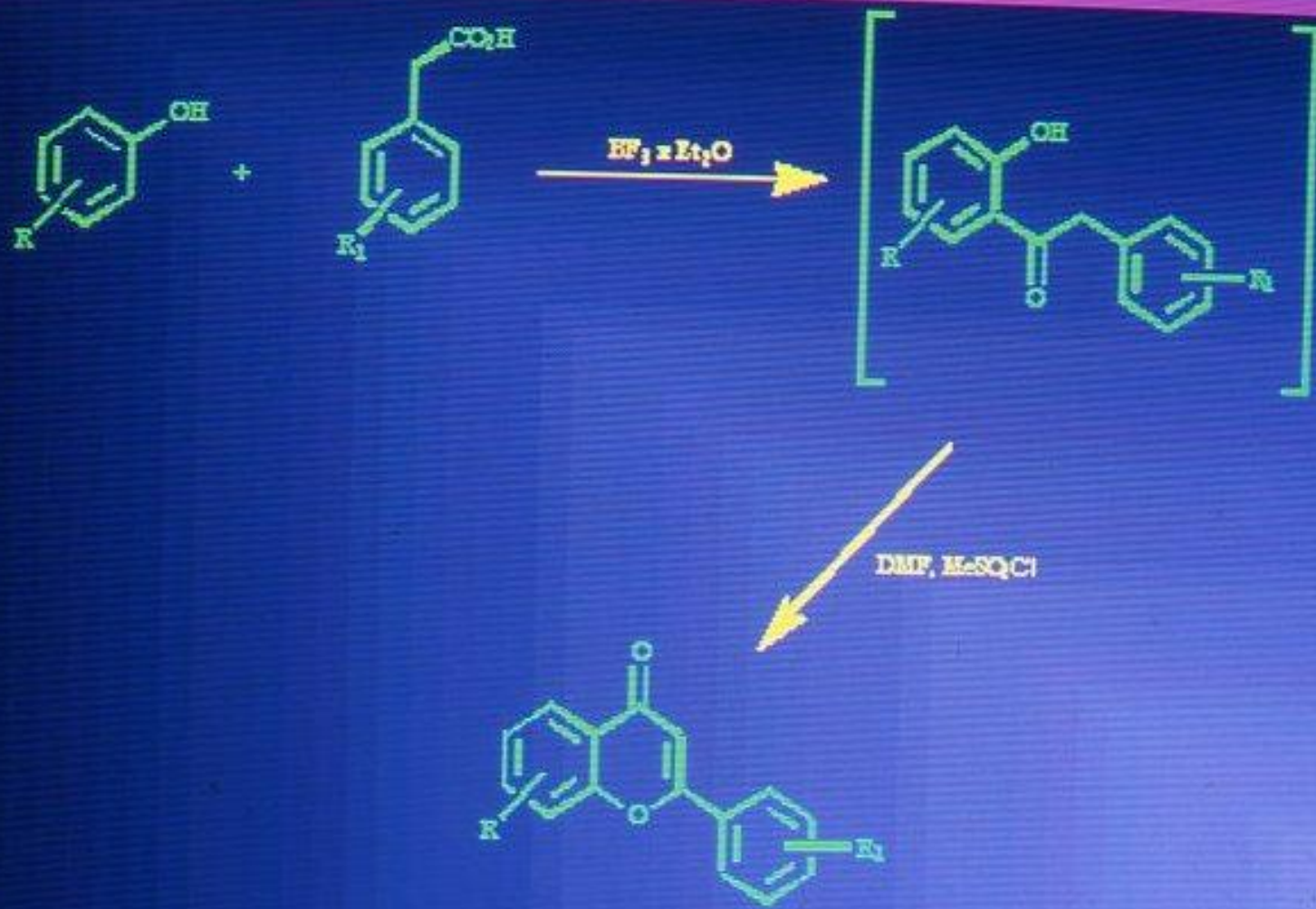
$R_1 = R_2 = H, R_3 = COCH_3$  6'-O-ACETYLDAIDZIN

$R_1 = OH, R_2 = H, R_3 = COCH_3$  6'-O-ACETYLGENISTIN

$R_1 = R_2 = H, R_3 = COCH_2CO_2H$  6'-O-MALONYLDAIDZIN

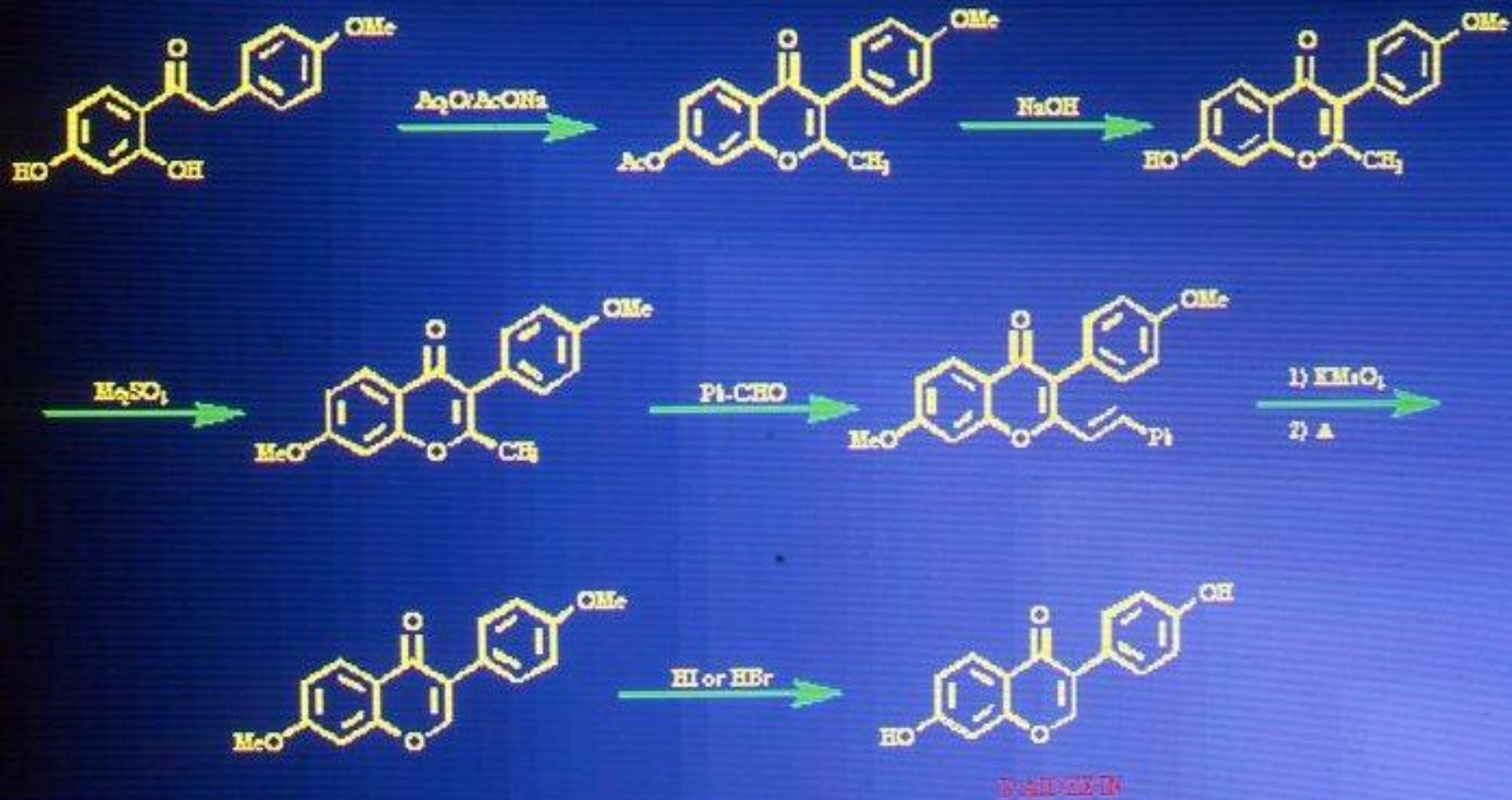
$R_1 = OH, R_2 = H, R_3 = COCH_2CO_2H$  6'-O-MALONYLGENISTIN

# SYNTHESIS OF ISOFLAVONES





# ALTERNATIVE SYNTHESIS OF DAIDZEIN



# ALTERNATIVE RING-CLOSURE IN ISOFLAVONES SYNTHESIS

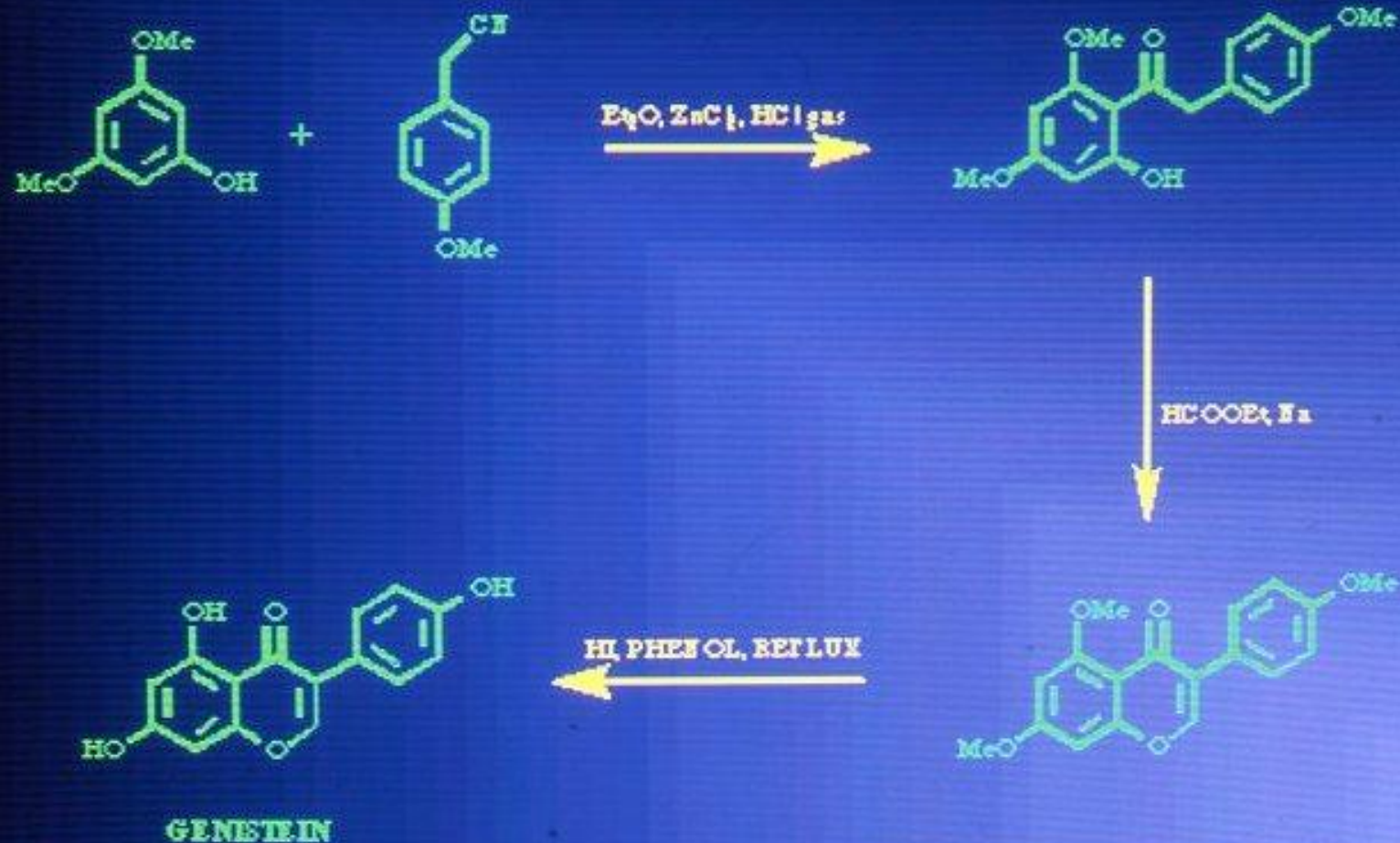


$\text{R} = \text{H}$ , DAIDZEIN

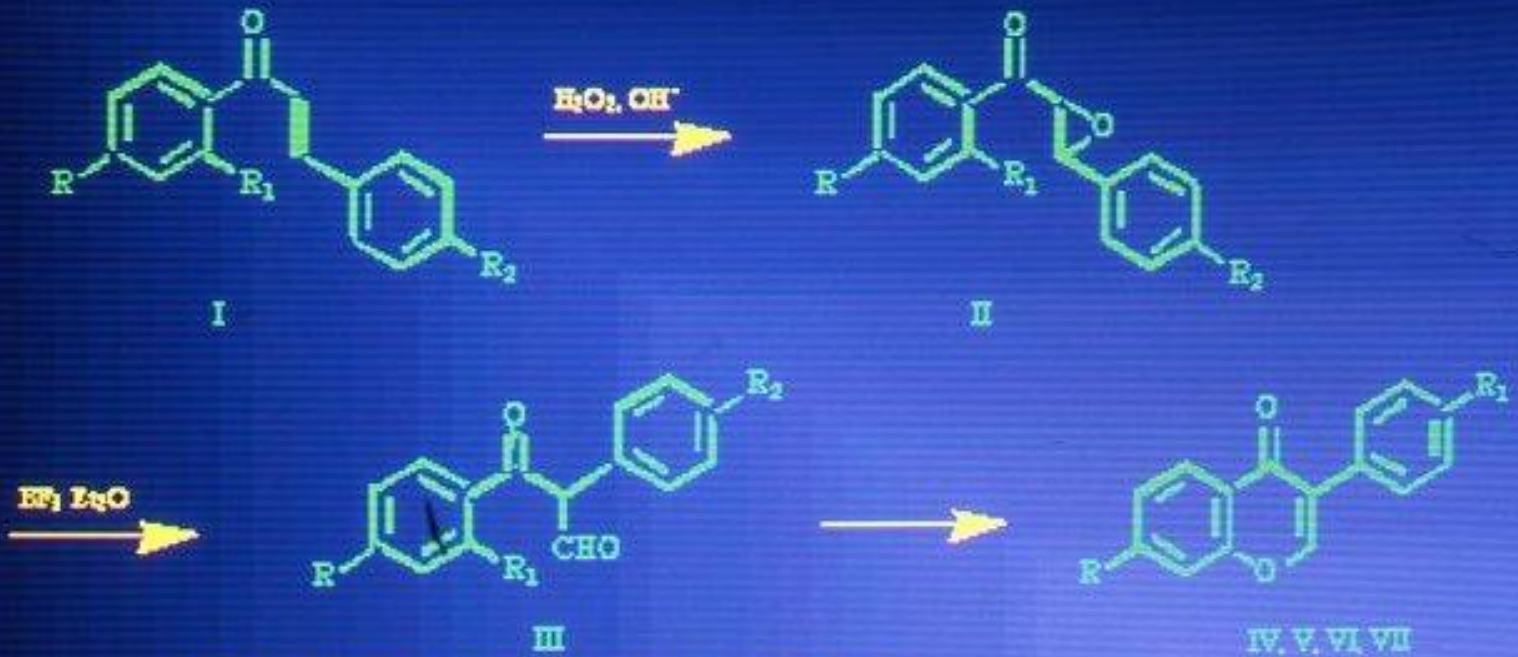
$\text{R} = \text{OH}$ , GENSTEIN



# ALTERNATIVE SYNTHESIS OF GENISTEIN



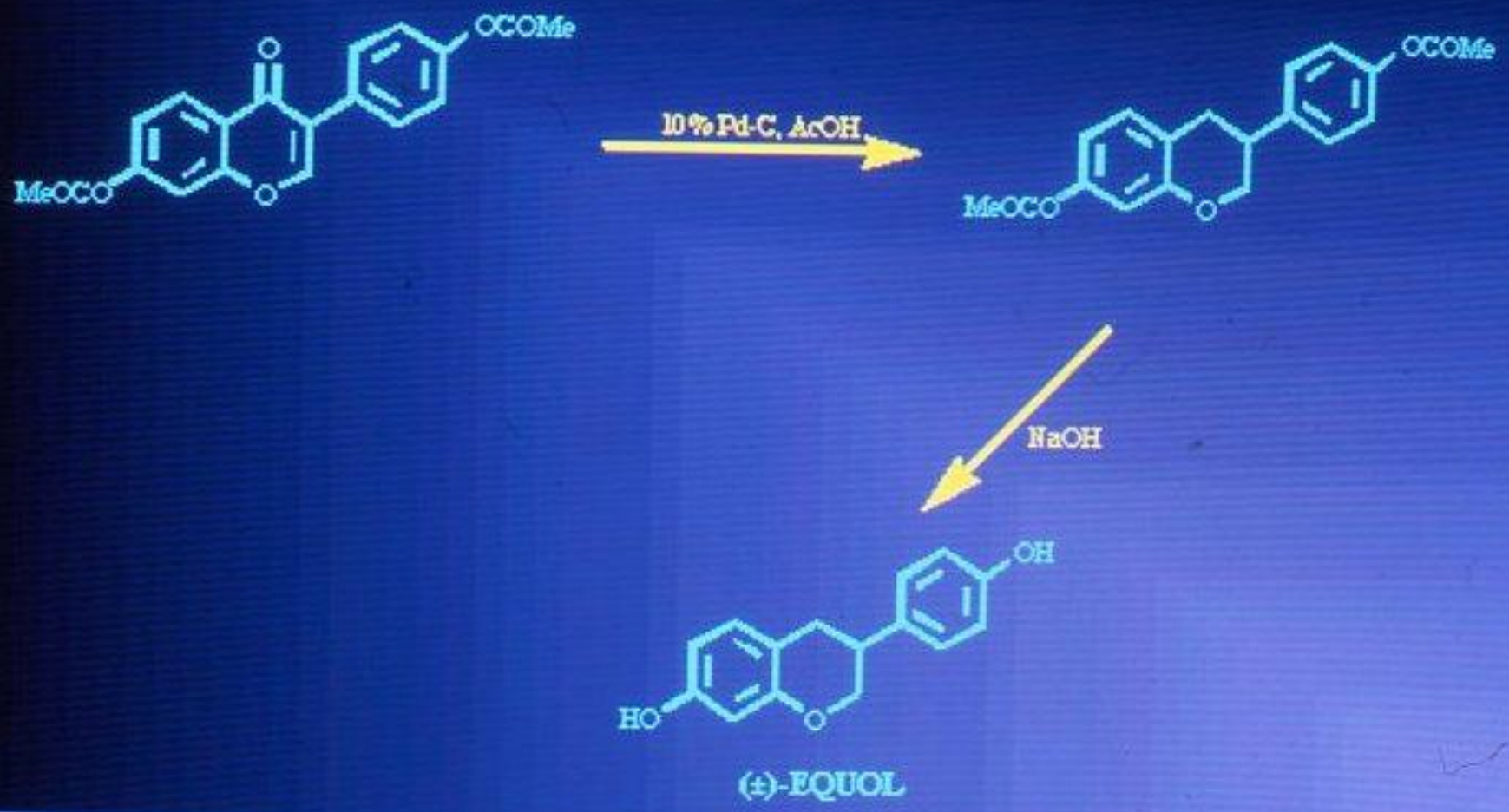
# Aryl Migration



For (I-III) a, R=R<sub>1</sub>=R<sub>2</sub>=H; b, R=R<sub>1</sub>=OMe, R<sub>2</sub>=H;  
 c, R=R<sub>1</sub>=R<sub>2</sub>=OMe; d, R=R<sub>1</sub>=H; R<sub>2</sub>=OMe  
 e, R=H; R<sub>1</sub>=R<sub>2</sub>=OMe; f, R=R<sub>1</sub>=OC<sub>7</sub>H<sub>7</sub>; R<sub>2</sub>=OMe  
 (IV) R=R<sub>1</sub>=H; (V) R=OH; R<sub>1</sub>=H  
 (IV) R=R<sub>1</sub>=OH, Daidzein; (VII) R=OH; R<sub>1</sub>=OMe, Formononetin

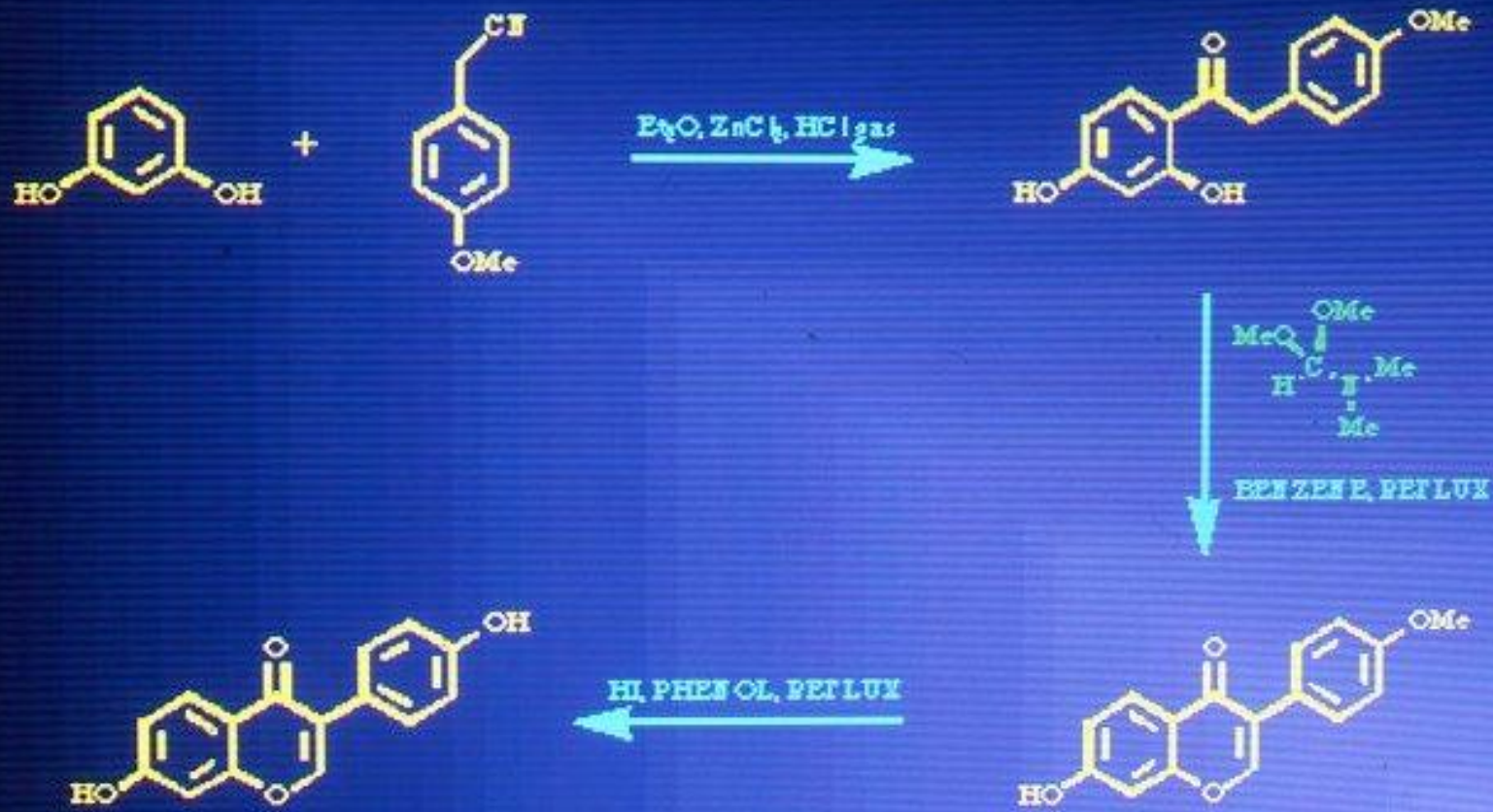


# SYNTHESIS OF (±)-EQUOL

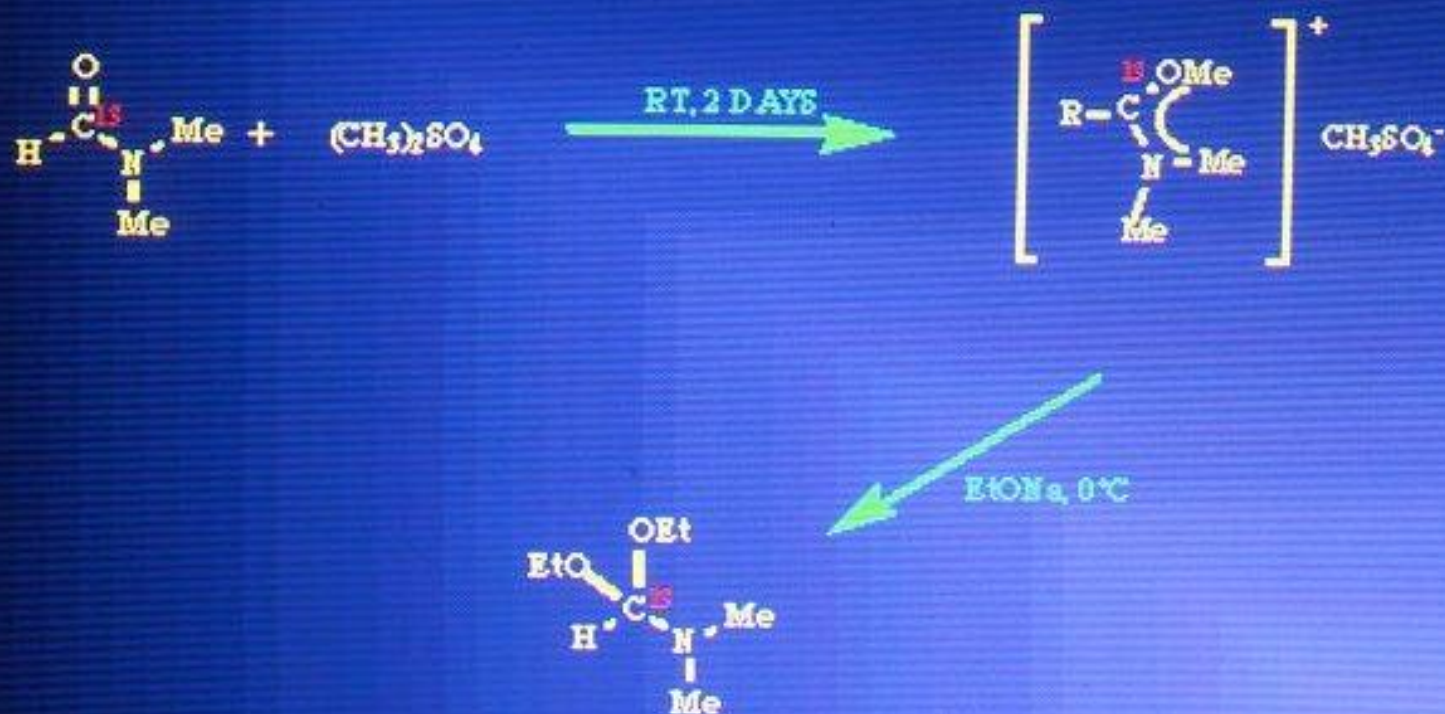




# LARGE-SCALE SYNTHESIS OF DAIDZEIN

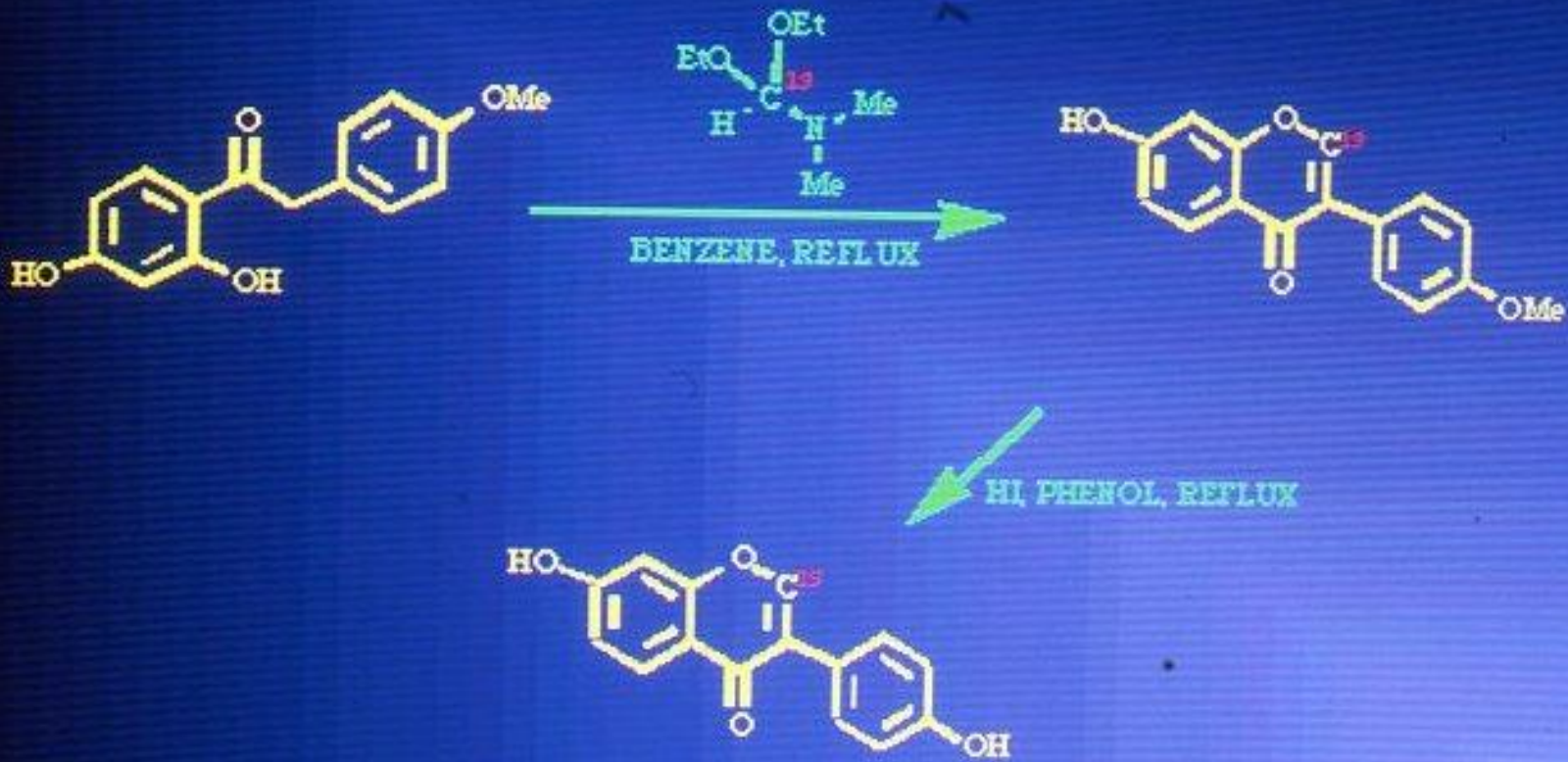


# SYNTHESIS OF $^{13}\text{C}$ -DMF DIETHYL ACETAL

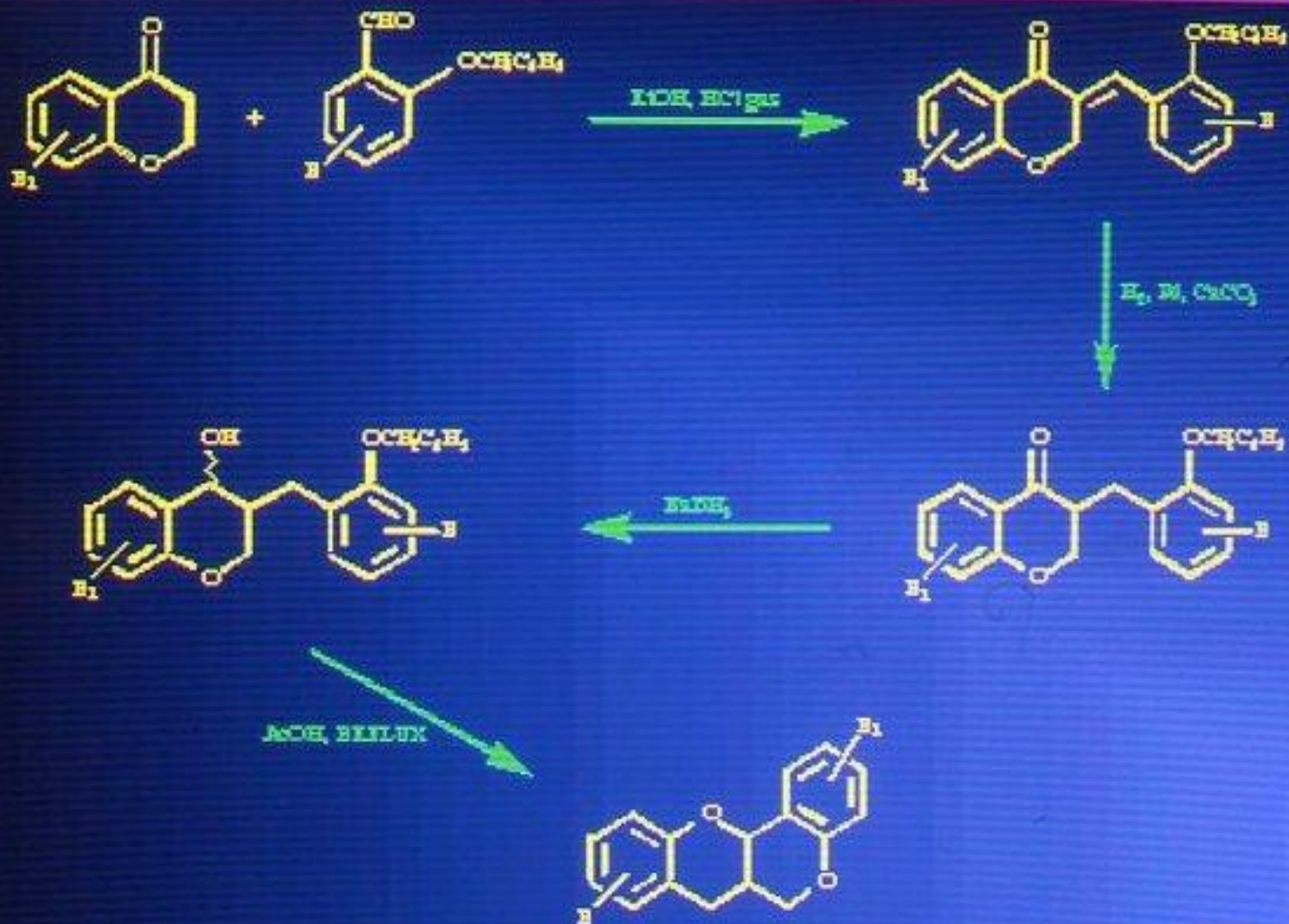




# SYNTHESIS OF $^{13}\text{C}$ -LABELLED DAIDZEIN



# SYNTHESIS OF COUMESTAN DERIVATIVES



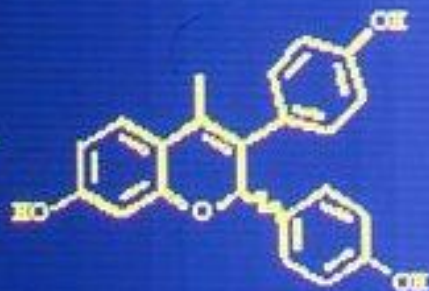


# SYNTHESIS OF OPTICALLY ACTIVE ISOFLAVONES DERIVATIVES AS ANTIESTROGEN RECEPTOR

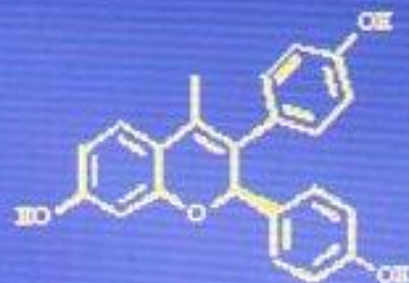
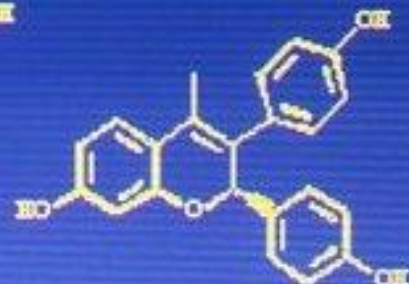


1) 1-hydroxy benzofuran-2-one  
piperidine, reflux

2)  $\text{MeLi}$   
3)  $\text{AcOH}, \text{H}_2\text{O}$



Chiral resolution



# ACKNOWLEDGEMENTS

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