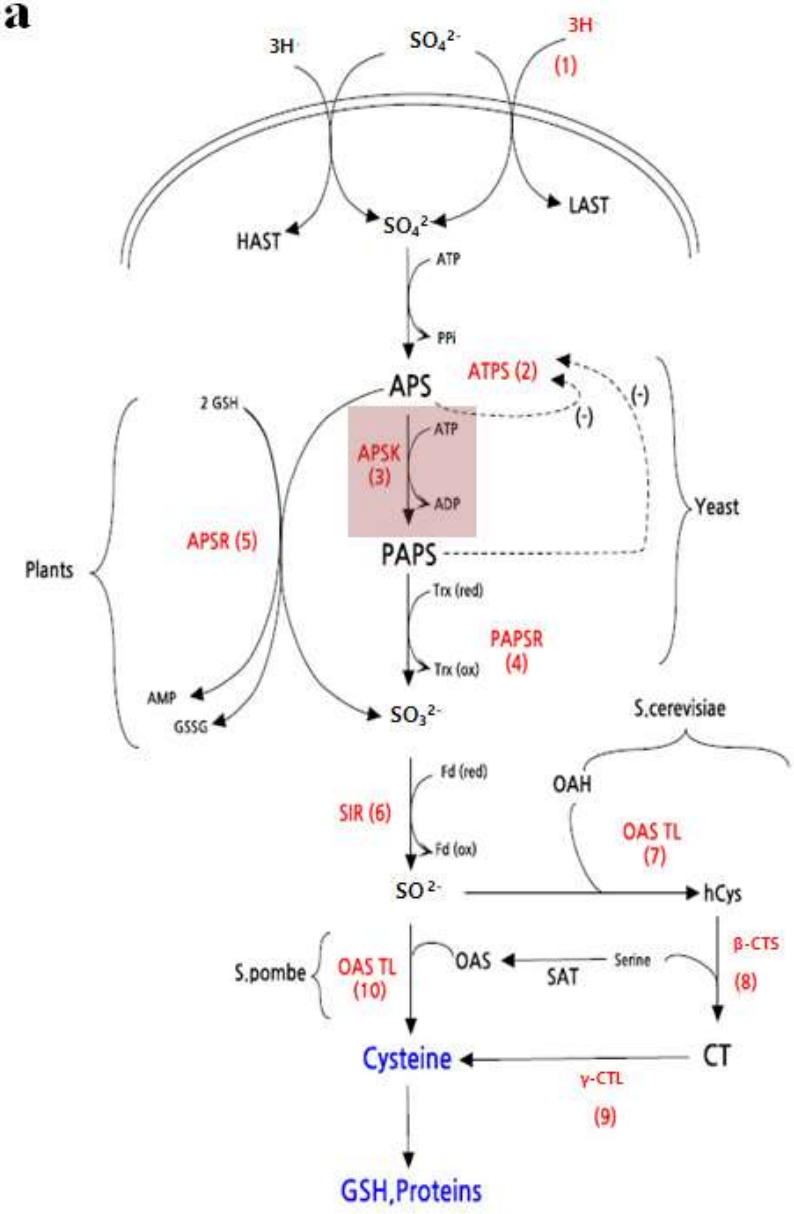
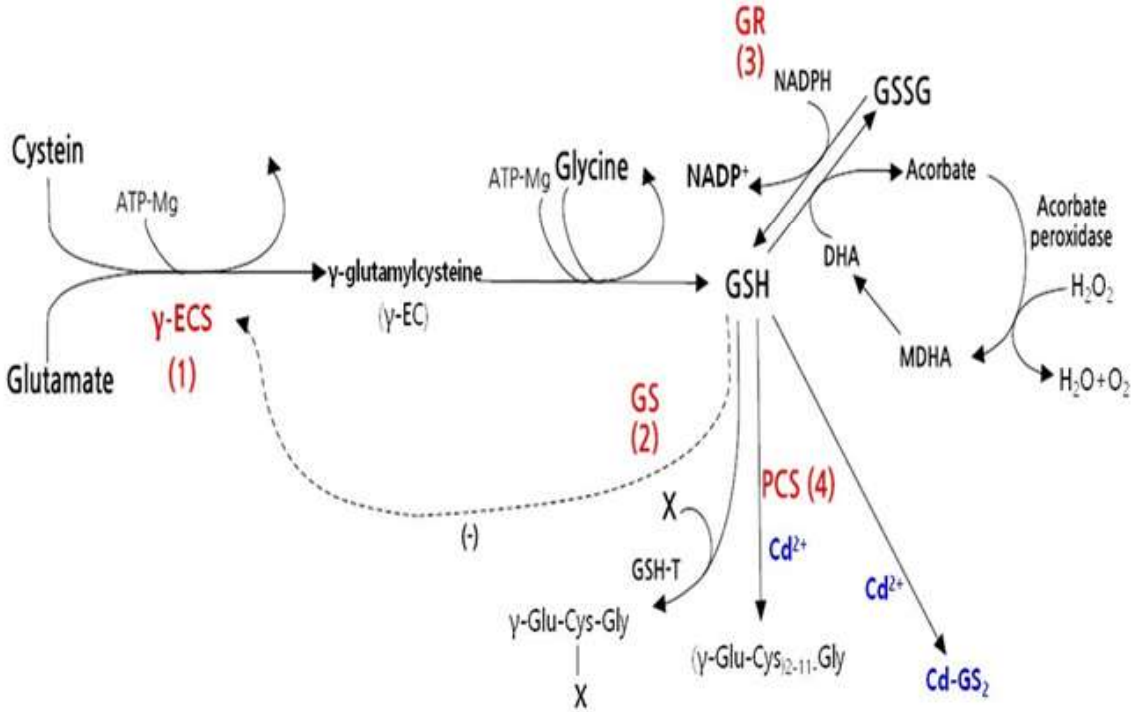
a


3H
SO_4^{2-}
3H
(1)
HAST
SO_4^{2}
LAST
ATP
PPi
APS
ATPS (2)
(-)
(-)
2 GSH
ATP
APSK
(3)
ADP
Yeast
Plants
APSR (5)
PAPS
Trx (red)
PAPSR
(4)
Trx (ox)
AMP
GSSG
SO_3^{2-}
S.cerevisiae
Fd (red)
OAH
SIR (6)
OAS TL
(7)
Fd (ox)
SO^{2-}
hCys
S.pombe
OAS TL
(10)
OAS
SAT
Serine
β-CTS
(8)
Cysteine
CT
γ-CTL
(9)
GSH,Proteins

b


GR
(3)
NADPH
GSSG
Cystein
ATP-Mg
ATP-Mg
Glycine
$NADP^+$
Acorbate
Acorbate
peroxidase
DHA
γ-glutamylcysteine
(γ-EC)
GSH
H_2O_2
γ-ECS
(1)
MDHA
H_2O+O_2
Glutamate
GS
(2)
PCS (4)
X
(-)
Cd^{2+}
GSH-T
Cd^{2+}
γ-Glu-Cys-Gly
(γ-Glu-Cys$_{(2-11)}$-Gly
Cd-GS_2
X