TABLE 11-1

RADIOPROTECTIVE COMPOUNDS

Compounds	Protective Effectiveness*	Probable Mechanism of Action	References
Aminothiols		Free-radical scavenging, hydrogen donation	
Cysteine	(+++)		3-6
WR-2721	(+++)		3,6,7
MPG	(++)		3,8,9
Other Sulfur Compounds		Free-radical scavenging	
Dimethylsulfoxide**	(++)		4,10,11
Thiourea	(+)		10,12
Cyanide derivatives***		Hypoxia	
Cyanide Hydroxyacetonitrile	(++)		12-14
	(+++)		10,12,14
Chelating Agent		Uncertain	
EDTA	(+)		10,12
Metabolites		Free-radical scavenging	
Glucose†	(+)		12
Fructose†	(+)		12
Hypoxia inducers		Hypoxia	
Paraminopropiophenone	(+++)	Hemoglobin changes	6,12,14
Carbon monoxide	(++)		14
Ethanol†	(++)	Respiratory-center depression	14
Morphine	(++)		14
Serotonin	(+++)	Hemodynamic alterations	14
Immunomodulators		Hematopoietic system regeneration	
Glucan	(++)		3,15
Trehalose dimycolate	(++)		16,17
Endotoxin	(++)		3,18-20
Cytokines		Hematopoietic system regeneration	
Interleukin-1	(++)		21
Tumor necrosis factor	(+)		21
Antioxidants		Free-radical scavenging	
Vitamin E	(+)		22,23
Vitamin A (beta-carotene)	(+)		24
Superoxide dismutase	(+++)	Oxygen detoxification	25
Selenium	(+)		22
Eicosanoids		Uncertain	
$DiPGE_2$	(++)		26,27

* Data taken from studies using mice exposed to X or gamma radiation. Grading is according to following scale: (+) slight protection (DRF<1.2); (++) moderate protection (DRF<1.5); (+++) good protection (DRF>5).

** Provides protection when administered topically

*** Highly toxic: Protective dose is very close to toxic dose

† Provides protection only at extremely high dose (glucose and fructose, 13,500 mg/kg; ethanol 6-7.5 ml/kg)

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