Table 1. Anticancer treatments regulating ROS levels.

Abbreviations: CAT, catalase; ETC, electron transport chain; GPX, glutathione peroxidase; GSH, reduced glutathione; GSSG, glutathione disulfide; GCL, glutamate cysteine ligase; NSCLC, non-small-cell lung carcinoma; ROS, reactive oxygen species; SOD1, superoxide dismutase 1; TrxR, thioredoxin reductase.

Drugs	Mechanism of action	Cancer types	Context	Median survival rate	Ref(s)
Chemotherapeutic drugs targeting the redox metabolism in cancer					
Gemcitabine	DNA synthesis inhibition. Induces the accumulation of ROS and increases the capacity of antioxidant programs	Pancreatic cancer	*In vitro*, and *in vivo*		[39]
Taxanes (Paclitaxel and docetaxel)	Promote mitochondrial cell death through the release of cytochrome c Disrupt the mitochondrial electron transport chain	Different types of cancer	*In vitro*, and *in vivo*		[82, 83]
Anthracyclines (Doxorubicin or epirubicin)	Insert into the DNA of replicating cells and inhibit topoisomerase II, which prevents DNA and RNA synthesis	Different types of cancer	Clinical	Metastatic Breast Cancer: 7-8 months	[84, 85]
Arsenic trioxide (As_2O_3)	Impairs the function of the mitochondrial electron transport chain Inhibits GPx, TrxR and CAT	Acute promyelocytic leukemia and lung cancer	*In vitro*, *in vivo*, and clinical	Acute promyelocytic leukemia: complete remission	[31, 32, 86, 87]
Methotrexate	Triggers ROS-associated cell apoptosis	Different types of cancer	*In vitro*		[88]
Mitoxantrone	Triggers cell membrane scrambling	Different types of cancer	*In vitro*		[89]
Tamoxifen	Promotes cancer cell senescence	Colon and breast cancer	*In vitro*		[90]
Cisplatin	Generation of nuclear DNA adducts	Different types of cancer	*In vitro*, and clinical	NSCLC: 9.1 months	[91-93]
ATN-224	Inhibits SOD1 Inhibits ETC complex IV	NSCLC and prostate cancer	*In vivo*, and clinical	Prostate cancer: median progression-free survival 30 weeks	[94, 95]
Compounds targeting the *de novo* GSH synthesis					
Buthionine sulphoximine (BSO)	Inhibits GCL activity and de novo GSH synthesis Enhances A_2O_3 activity	Ovarian, breast and pancreatic cancer, melanoma	*In vitro*, and *in vivo*		[57, 96, 97]
NOV-002	Glutathione disulfide mimetic that alters the intracellular GSH/GSSG ratio	Lung, breast and ovarian cancer	Clinical	Advanced NSCLC ~ 8.5 months	[98, 99]
Sulphasalazine	Inhibitor of cysteine/glutamate antiporter xCT; reduces intracellular transport of cysteine required for GSH synthesis	Pancreatic and lung cancer	*In vitro*, and *in vivo*		[100, 101]
L-asparaginase	Depletes glutamine, reduces GSH	Leukemia and pancreatic cancer	*In vitro*, *in vivo*, and clinical	PDAC: overall survival 6.0 months (combo with chemotherapy) versus 4.4 months	[102-104]

				(chemotherapy alone)	
Erastin	Downregulates cysteine redox shuttle and blocks GSH regeneration	Different types of cancer	*In vitro*		[105, 106]
(1S, 3R)-RSL3 (RSL3)	Induce ferroptosis without depleting the GSH pool	Lymphoma and renal carcinoma	*In vivo*		[107]