

# Cancer Research Tools

Cancer develops when a gene or a combination of genes change expression patterns. As the disease progresses these changes lead to misregulation of key pathways involved in cell proliferation, differentiation, and cell death. Cancers arise gradually, resulting from the accumulation of abnormalities (mutations) in the cell's genetic material. These mutations can be due to a number of reasons including exposure to carcinogens, ionizing radiation, viral infection, errors in deoxyribonucleic acid (DNA) replication, or inherited defects. Mutations accumulate in cells contributing to the invasive and metastatic properties of cancers, and allowing the cancer cells to take up residence in many different tissue environments. Mutations resulting in cancer frequently occur in oncogenes (genes that cause normal cells to become cancerous tumor cells) or in tumor suppressor genes.

Alfa Aesar has numerous reagents that are useful in cancer research, including reagents that have known anti-tumor or cancer preventive properties and a short list of carcinogens.

## Anti-tumor Agents

Item	Description	Research Application	Sizes
J61745	(-)-Epigallocatechin gallate	A green tea antioxidant. Has been proposed to inhibit proteasome; Also inhibits the anti-apoptotic protein Bcl-xl	5mg, 10mg, 50mg
J62266	(±)-Thalidomide, 99+%	Teratogenic compound found to inhibit HIV-1 replication and FGF-induced angiogenesis	100mg
A12942	1-Methylisatin, 97%	A Caspase-3 inhibitor	1g, 5g, 25g
J60378	Bortezomib, 99%	A dipeptide boronate inhibitor of the 20S proteasome. It inhibits the proteasome at the chymotryptic site and is slowly reversible.	5mg, 10mg, 25mg
J62523	Camptothecin	Inhibits DNA topoisomerase I	1g
J60433	Carboplatin	Demonstrates antitumor activities in lung cancers and ovarian cancer	1g, 5g
J61964	Chlorambucil, 98%	Alkylates DNA; induces apoptosis in chronic lymphocytic leukemia cells	5g, 25g
10471	cis-Diamminedichloro-platinum(II), Pt 64.5% min	Potent anticancer agent that blocks DNA synthesis	250mg, 1g, 5g
J61023	Dacarbazine	Generates methyl adducts to purine bases in DNA	500mg, 1g
J63767	Gossypol, 98+%	Bcl-2 antagonist. Overcomes Bcl-2- and Bcl-XL-mediated apoptosis resistance in a Jurkat T cell leukemic model.	25mg, 100mg, 250mg
A11411	Hydroquinone, 99%	Has action as a reducing agent; demonstrated ability to reduce the viable cell number of oral tumor cell.	250g, 1kg, 5kg
J63075	Methotrexate	Formerly known as amethopterin; inhibits metabolism of folate	100mg, 1g
J62734	Paclitaxel, 99.5+%	A mitotic inhibitor. Antitumor activities observed in ovarian, breast and lung cancers	100mg, 500mg, 1g
J63397	Geldanamycin, 99+%	Inhibits HSP90; induces degradation of mutated v-Src, Bcr-Abl and p53.	25mg, 100mg, 250mg

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Item	Description	Research Application	Sizes
J63053	Trimethoprim	Dihydrofolate reductase inhibitor with selectivity for the prokaryote enzyme	1g, 5g, 25g
J63598	Vinblastine sulfate, 98%	First isolated from <i>Catharanthus roseus</i> ; known antimicrotubule activity. Induces apoptosis in non small cell lung cancer and Hodgkin's lymphoma cells	10mg, 50mg
J60907	Vincristine sulfate, 98+%	Isolated from <i>Catharanthus roseus</i> ; produced by joining the two alkaloids catharanthine and vindoline. Demonstrates antimetabolic activity.	5mg, 25mg

## Carcinogens

Item	Description	Research Application	Sizes
40370	Arsenic(III) oxide, 99.5% (metals basis)	Very potent agent against acute promyelocytic leukemia (APL). Causes skin, lung and bladder cancer.	10g, 50g, 250g
L14012	Benzene	Environmental carcinogen; hematotoxin that is linked to increased incidence of leukemia in humans.	100ml, 500ml
12373	Cadmium chloride hemipentahydrate, ACS, 79.5-81.0%	Carcinogen that acts by inhibiting DNA mismatch repair. Environmental pollutant.	50g, 250g
33314	Formaldehyde, 37% in aq. soln., ACS, 36.5-38.0%, stab. with 10-15% methanol	Induces tumors in the nasal epithelium of rats, and is suspected to be a human carcinogen. Potent mutagen.	500ml, 1L, 4L, 4X1L, 4X4L

## Chemopreventive Agents

Item	Description	Research Application	Sizes
A18542	$\alpha$ -Naphthoflavone, 97%	An aryl hydrocarbon receptor antagonist	5g, 25g
B23840	Ergosterol hydrate, 96% (dry wt.), cont. up to ca 6% water	Suppresses inflammatory responses in RAW264.7 macrophages and growth of HT29 colon adenocarcinoma cells	5g, 25g
A13736	Geraniol, 97%	Exhibits chemopreventive activities during the initial phases of hepatocarcinogenesis and renal carcinogenesis	50g, 250g, 1kg
J62126	Hesperidin, 98+%	Antioxidant	25g, 100g
J63255	Indomethacin, 99+%	Non-selective cyclooxygenase inhibitor	1g, 5g, 25g
J60373	Kaempferol, 98+%	Inhibits topoisomerase I catalyzed DNA religation. Induces apoptosis and is cytotoxic to human leukemic cell lines	10mg, 50mg
J60790	Resveratrol	A compound with antioxidant activity; activates SIRT1	500mg
A13570	Rutin trihydrate	A polyphenolic flavonoid that acts as an antioxidant and nitric oxide scavenger. Protects against DNA damage	25g, 100g, 250g
J61772	Sulindac	Useful in chemoprevention of colorectal adenomas	25g

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