P-glycoprotein (P-gp) also known as multidrug resistance protein 1 (MDR1) is an important protein of the cell membrane that pumps many foreign substances out of cells. More formally, it is an ATP-dependent efflux pump with broad substrate specificity. P-gp is extensively distributed and expressed in the intestinal epithelium where it pumps xenobiotics (such as toxins or drugs) back into the intestinal lumen, in liver cells where it pumps them into bile ducts, in the cells of the proximal tubular of the kidney where it pumps them into urine-conducting ducts, and in the capillary endothelial cells comprising the blood–brain barrier and blood-testis barrier, where it pumps them back into the capillaries. Some cancer cells also express large amounts of P-gp, which renders these cancers multi-drug resistant. P-gp is an ATP-dependent drug efflux pump for xenobiotic compounds with broad substrate specificity. It is responsible for decreased drug accumulation in multidrug-resistant cells and often mediates the development of resistance to anticancer drugs. This protein also functions as a transporter in the blood–brain barrier.
## P-glycoprotein Inhibitors & Modulators

### (20S)-Protopanaxadiol

**Bioactivity:** protopanaxadiol-type ginseng saponin; apoptosis inducer.

- **Purity:** >98.0%
- **Clinical Data:** No Development Reported
- **Size:** 10mM x 1mL in DMSO, 10 mg, 50 mg

### Alisol F

**Bioactivity:** Alisol F is a natural product.

- **Purity:** >98%
- **Clinical Data:** No Development Reported
- **Size:** 5 mg, 10 mg

### Bircodar (VX-710)

**Bioactivity:** Bircodar (VX-710) is an modulator of P-glycoprotein and MRP-1, shows effective chemosensitizing activity in multidrug resistant cells.

- **Purity:** >98%
- **Clinical Data:** No Development Reported
- **Size:** 1 mg, 5 mg, 10 mg, 20 mg

### Dofequidar

**Bioactivity:** Dofequidar (MS-209) is a novel quinoline compound, which can reverse P-glycoprotein (P-gp)-mediated MDR.

- **Purity:** >98%
- **Clinical Data:** Phase 1
- **Size:** 5 mg, 10 mg, 50 mg, 100 mg

### Elacridar hydrochloride (GF120918A)

**Bioactivity:** Elacridar Hcl (GF120918, GW0918, GG918) is a P-glycoprotein (Pgp) inhibitor, and has been used both in vitro and in vivo as a tool inhibitor of P-glycoprotein (Pgp) to investigate the role of transporters in the disposition of various test molecules.

- **Purity:** 99.66%
- **Clinical Data:** Phase 1
- **Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg

### HM30181 (HM30181A)

**Bioactivity:** HM30181 is a potent selective inhibitor of P-glycoprotein.

- **Purity:** 97.03%
- **Clinical Data:** Phase 1
- **Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg

### Piperine (Bioperine; 1-Piperoylpiperidine)

**Bioactivity:** Piperine, a natural alkaloid isolated from Piper nigrum L, inhibits P-glycoprotein and CYP3A4 activities with an IC₅₀ value of 61.94±0.054 μg/mL in HeLa cell.

- **Purity:** 98.76%
- **Clinical Data:** Phase 2
- **Size:** 10mM x 1mL in DMSO, 200 mg, 1 g, 5 g
Bioactivity: Polyoxyethylene stearate (POES) is a non-ionic emulsifying agent.

Purity: >98%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO, 200 mg, 1 g, 5 g

Bioactivity: Tariquidar is a potent and specific inhibitor of P-glycoprotein (P-gp) with the high affinity ($K_d=5.1\pm0.9$ nM).

Purity: 98.57%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO, 10 mg, 50 mg, 100 mg

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Bioactivity: Tariquidar methanesulfonate, hydrate is a potent and specific inhibitor of P-glycoprotein (P-gp) with the high affinity ($K_d=5.1\pm0.9$ nM).

Purity: 99.67%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO, 10 mg, 50 mg, 100 mg

Bioactivity: Valspodar is a P-glycoprotein (P-gp) inhibitor widely used as overcoming multidrug resistance modulator.

Purity: >98.0%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO, 5 mg, 10 mg

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Bioactivity: Zosuquidar (LY335979) is a potent modulator of P-glycoprotein-mediated multi-drug resistance with $K_i$ of 60 nM.

Purity: >98%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg

Bioactivity: Zosuquidar trihydrochloride is an inhibitor of P-glycoprotein with a $K_i$ value of 59 nM.

Purity: 98.75%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO, 10 mg, 50 mg, 100 mg