Etoposide

Etoposide is a cytotoxic chemotherapeutic agent used in treating solid malignancies like small-cell lung cancer and testicular cancers. Off-label indications include leukemia and lymphoma. This drug works by inhibiting topoisomerase II, inhibiting proper DNA replication, which leads to cancer cell apoptosis. Side effects of treatment include alopecia, myelosuppression, hypotension, nausea and vomiting.



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Indications

Small Cell Lung Cancer
Small Lung Tumor-guys
Etoposide is indicated for treating small-cell lung cancer in combination with carboplatin or cisplatin.

Testicular Cancer
Testicle Tumor-guys
Etoposide is used in treating solid malignancies, and is indicated for treating testicular cancers. It is used in combination therapy with ifosfamide and cisplatin.

Mechanism of Action

Inhibits Topoisomerase II
Inhibiting-chains on Tadpoles with (2) Tutu
Etoposide works by inhibiting the enzyme topoisomerase II. This enzyme is crucial for DNA replication, working to cleave and unwind DNA supercoils, and then to re-ligate them. This uncoiling is necessary for proper DNA replication, and by inhibiting this enzyme, cancer cell apoptosis is triggered.

Errors in DNA Synthesis Cause Apoptosis
Broken DNA causes A-popping-cell
By inhibiting topoisomerase II, etoposide leads to errors in DNA synthesis, leading to cancer cell apoptosis. Cancer cells rely on this enzyme more than healthy cells, since they divide more rapidly. Therefore, this causes errors in DNA synthesis and promotes apoptosis of the cancer cell.

Side Effects

Myelosuppression
Suppressed Red and White blood cells
A common side effect of etoposide is myelosuppression. This bone marrow suppression leads to decreased white blood cell counts, low red blood cell counts, and low platelet counts.

Alopecia
Aloe-plant on bald-head
Another notable side effect of the chemotherapeutic agent, etoposide, is alopecia, or hair loss.

Hypotension
Hippo-BP
Blood pressure changes are another common side effect of etoposide and patients may develop hypotension while taking this medication. It should be noted there have been documented instances of hypertension occurring with this medication, too.

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Nausea and Vomiting

Vomiting

GI upset is a common side effect of etoposide therapy, and patients often experience profound nausea and vomiting.

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