

Indirubin

Scientific Name

Indigofera tinctoria



Clinical Summary

Extracted from the Indigo plant (Isatis Root, Isatis Leaf). Indirubin is a minor constituent of a well-known traditional Chinese prescription, Dang Gui Long Hui Wan used in the treatment of chronic myelogenous leukemia (CML). Numerous studies have demonstrated that Indirubin inhibits cyclin-dependent kinases in tumor cells (1) (2), however further clinical trials are needed to confirm its role in the treatment of CML. Indirubin has anti-inflammatory effects in animals (3). Meisoindigo, a metabolite of Indirubin has also been shown to have similar properties (4).

Purported uses

- Cancer treatment
- Inflammation

Mechanism of Action

Indirubin inhibits DNA synthesis in rats. Indirubin inhibits cell proliferation in the late-G1 and G2/M phase by selectively inhibiting cyclin-dependent kinases (CDK) (4) through the interaction with the kinase's ATP-binding site (2). Indirubin may also play a role in inhibiting the assembly of microtubules, further reducing the rate of cell reproduction (5). Indirubin's anti-inflammatory effects appear to come from an inhibition of interferon-gamma (3). Indirubin is a minor constituent of *Indigofera tinctoria*, however a synthetic form of the substance was shown to have similar effectiveness against CML (6) (7).

Adverse Reactions

Reported (Oral): Mild to severe nausea, vomiting, abdominal pain, diarrhea, headache and edema. A few patients were found to have pulmonary arterial hypertension and cardiac insufficiency following long-term treatment (4).

Literature Summary and Critique

Limited clinical study data is available.

References

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