



PATIENT & CAREGIVER EDUCATION

Indirubin

This information describes the common uses of Indirubin, how it works, and its possible side effects.

Tell your healthcare providers about any dietary supplements you're taking, such as herbs, vitamins, minerals, and natural or home remedies. This will help them manage your care and keep you safe.

What is it?

Evidence on whether indirubin can treat chronic conditions is lacking.

Indirubin is derived from the Indigo Plant ([Isatis Root](#), [Isatis Leaf](#)). It has also been created synthetically in the lab. In Asia, it is part of combination formulas used clinically and in traditional herbal prescriptions to treat chronic conditions such as inflammation, gastrointestinal diseases, and some forms of cancer. Animal studies suggest this substance may help keep cancer cells from reproducing. Indirubin may also reduce inflammation by inhibiting part of the immune response.

Studies of indirubin in humans are very limited and side effects with some formulations have been reported. Well-designed clinical trials are needed to confirm safety and effectiveness of this compound for various conditions.

What are the potential uses and benefits?

- **To treat cancer**

There is a lack of evidence to support this use. Case reports and initial analyses suggest possible benefits in leukemia, but well-designed clinical trials are needed to confirm safety and effectiveness.

- **To reduce inflammation**

A small study in patients with head and neck cancer suggest that indirubin, taken as indigowood root powder, may reduce mucosal damage from radiation therapy. Additional studies are needed to confirm this effect.

- **To treat psoriasis**

A few studies suggest topical formulations can treat inflammatory skin conditions such as psoriasis and contact dermatitis.

- **To treat gastrointestinal conditions**

Oral *I. naturalis* has been used in clinical trials in Asia for ulcerative colitis and other gastrointestinal conditions, but results are preliminary and severe adverse events have been reported.

What are the side effects?

With oral *I. naturalis*: Liver dysfunction, abdominal pain, nausea, and headache

Case reports

- **Inflamed colon:** In 2 women with a history ulcerative colitis who took oral *I. naturalis*. In one case, alleviation of the condition required surgery.
- **Lower abdominal pain and bloody stools:** Caused by self-treatment with *I. naturalis* in a 44-year-old woman with ulcerative colitis who used this product for several months to replace her standard medications.
- **Bluish-black patches in the small intestine:** Related to the use of *I. naturalis* in a 57-year-old woman with Crohn's disease.
- **Inflamed pancreas:** In an 11-year old boy after 2 doses of *I. naturalis* to treat Crohn's disease. The condition improved after the product was discontinued.

- **High blood pressure that affects the lung and heart:** A serious condition known as pulmonary arterial hypertension has been reported in multiple cases of patients treated with oral *I. naturalis* for ulcerative colitis. Symptoms have included swelling, shortness of breath, cold limbs, and chest pain and required acute medical care.

What else do I need to know?

Patient Warnings:

- There have been serious adverse effects in patients treated with oral *I. naturalis* for gastrointestinal conditions. Therefore, this product should not be used outside of clinical trials.

Do Not Take if:

You are taking CYP450 3A4 substrate drugs: Lab studies suggest that indirubin, a component of the isatis plant, may affect how these drugs are metabolized. Clinical relevance has yet to be determined.

Special Point:

- This product is currently not sold as a dietary supplement. It is only available for preclinical and clinical studies.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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