

## Indole-3-carbinol (I3C)

Indole-3-carbinol, or I3C, is the classic example of the double-edged sword in cancer chemoprotection. We were the first to observe this in the early 1980s. When we did our first experiments with I3C, we gave it with the carcinogen aflatoxin to trout and with a different carcinogen, dimethylbenzanthracene, to rodents. I3C helps to block the cancer process when is given at the same time as the carcinogen.

Also, I3C was given to rats in breast cancer experiments because of its anti-estrogen effects. In that model, I3C suppressed mammary tumor development. So there has been tremendous interest in the compound for that reason. In our experiments with trout, we asked if I3C would protect against liver cancer if given over a protracted period. **Unfortunately, it promoted liver cancer.**

Years later we continued that work with rats and saw the same effect. Oddly enough, I3C shows this tumor promotional property because in the liver itself it is estrogenic. The public and the scientific community get very confused by this. It is one of the first examples of a compound that may reduce the risk of prostate cancer or breast cancer in people who are at very high risk of these cancers, but that may be offset by some increased risk for liver cancer.

It is a difficult risk-benefit equation. I would not take I3C supplements, nor would I recommend them. We do not know enough about mechanisms and nuances to gauge risk versus benefit in this situation.