

Women advised to avoid ZEN bust-enhancing supplements because of possible cancer risk

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Women who use bust-enhancing dietary supplements containing the mycoestrogen zearalenone (ZEN), a naturally occurring toxin that widely contaminates agricultural products, could be increasing their risk of breast cancer. That is the warning from breast health experts in a paper published online ahead of print publication in the January issue of *IJCP*, the *International Journal of Clinical Practice*.

"No clinical trials have been published on the use of potent oestrogens like ZEN in bust-enhancing products and their use should be discouraged because of the lack of evidence of their long-term safety" says Professor Ian Fentiman, consultant [breast surgeon](#) at Guy's and St Thomas' NHS Foundation Trust, London.

The use of ZEN to increase bust size is just one of the key concerns raised by the review focussing on the affects of ZEN and its derivatives on the human reproductive system and [breast cancer](#). It also included the use of ZEN to fatten up livestock, its use in [hormone replacement therapy](#) and [oral contraceptives](#), its links with premature puberty and its possible effects on breast cancer.

"ZEN is a toxic non-steroidal mycoestrogen produced by fungi that widely contaminates agricultural products, such as crops, eliciting oestrogenic responses by mimicking the female sex hormones" explains Professor Fentiman.

Using ZEN in animal feed has been associated with a wide range of

reproductive anomalies in livestock, including diminished fertility and infertility, reduced litter size and smaller offspring and negative effects on the [reproductive organs](#).

International studies have suggested links between consumption of ZEN-fed animals and products and precocious (early) puberty in young females.

These include an epidemic of premature breast development and early puberty in Puerto Rico, linked to dairy and meat products, and studies from Hungary and Italy where female children with precocious puberty had increased ZEN levels in their serum.

"In fact the European Union has banned using ZEN to fatten up cattle, a technique used in the USA since 1969, because of its links with precocious puberty" says Professor Fentiman.

"Recently it has been suggested that some ZEN derivatives can increase the growth of hormone-dependent breast tumours. It has also been reported that, depending on the dose, ZEN can either promote or prevent breast cancer. So the jury on whether its links with breast cancer are positive or negative is well and truly out at this stage."

The authors drew a number of conclusions from their review:

- There is a lack of information on the human metabolism of ZEN and disagreement on the mechanisms of ZEN oestrogenic action in human tissue.
- The presence of this mycoestrogen in cereals, milk, and meat, and the possibility of ZEN involvement in the development of new breast tumours, warrant further investigation.
- Future studies should investigate the effects of ZEN on the growth stimulation of hormone-dependent cancers and identify the key genes

that promote hormone-dependent cancers.

- ZEN promotes programmed cell death and reduces the proliferation of cancer cells when administered at certain doses.
- Although ZEN is a common diet toxic mycoestrogen, the potential risk to human health appears to only occur when it is absorbed in concrete concentrations or over a long period of time.
- A molecular biomarker of dietary exposure to ZEN and its derivatives will allow the detection and control of harmful food intake.
- The interaction of [ZEN](#) with anti-oestrogens and anticancer agents and antioxidants requires further investigation.

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