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Mushrooms can help prevent breast cancer

Breakthrough US research has found that eating 100 grams or less of white button mushrooms each day could reduce the incidence of breast cancer by suppressing oestrogen production in the body.

The study conducted by the City of Hope Cancer Centre and published in the December 15 issue of *Cancer Research*, suggests that the preventative effect is most significant on post menopausal women.

The finding is welcome news for women, with breast cancer the most common invasive cancer diagnosed in Australian females, causing over 50 deaths a week in 2004.

Dr Shiuan Chen, Ph.D., director of the City of Hope Department of Surgical Research, and lead author of the study said the research had been undertaken because previous clinical use has shown that aromatase inhibitors are effective drugs for treating hormone-responsive breast cancer and for preventing other breast cancers from developing.

"We got the idea to look at mushrooms because we know that synthetic aromatase inhibitors can prevent breast cancer recurrence," said Dr. Chen.

Dr Chen explained that since 60 per cent of premenopausal women and 75 per cent of postmenopausal women have breast cancers that need oestrogen to grow, controlling oestrogen levels can help limit or prevent cancer growth.

He said the effect was greater in postmenopausal women because they have the lowest circulating oestrogen levels, and their oestrogen production is controlled by tissues rather than by their brains. Aromatase is normally expressed in a number of tissues such as ovary, placenta, breast, fat and bone, but it is expressed at higher levels in breast cancer tissue than normal breast tissue.

The researchers found the phytochemical - conjugated linoleic acid - in mushrooms to have the most effective anti-aromatase effect out of seven vegetable extracts studied.

While tests showed that white button mushrooms had the strongest effect, shiitake, Portobello, crimini and baby button mushrooms also had significant inhibitory effects on armoatase, even when cooked.

Australian Mushroom Growers Association General Manager, Greg Seymour said the potential impact of the research was exciting.



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Mr Seymour said figures suggested there would be over 13,000 new cases of breast cancer this year with annual expenditure on the problem estimated at over \$240 million.

"In 2004 over 2,600 women died in Australia from breast cancer and if mushrooms can assist in lowering this tragic human cost I will be very pleased."

Dr Chen said researchers had confirmed that the anti-aromatase compounds stopped the growth of cancer cells.

Mice that were fed mushroom extract as part of the study had a 58 per cent reduction in breast tumour growth.

Dr Chen said similar research was now underway to test the effect of anti-aromatase compounds in food on prostate cancer.

"This approach to cancer prevention is very important, because people can more easily relate to common foods such as mushrooms and take the practical step to include appropriate amounts in their everyday diet. Ultimately, prevention is much better than treating the disease."

"Our study has shown that you don't need a strong effect to cause cancer prevention. The simple fact of eating just 100 grams or even less of mushrooms per day could have an effect on preventing new breast cancers."

Other researchers included Sei-Ryang Oh, Ph.D., Sheryl Phung, M.S., Gene Hur, B.S., Jing Jing Ye, B.S., Sum Ling Kwok, M.S., Lynn Adams, Ph.D. and Dudley Williams, Ph.D., all of City of Hope, as well as Gayle Shrode, Ph.D. and Martha Belury, Ph.D. of The Ohio State University.

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For further information or to arrange an interview with Shiuan Chen or Greg Seymour please contact Chris Rowley on 02 8901 0329 or Kathleen O'Neil of City of Hope on +001 626 471 7357.

Please note a copy of the full Paper - "Anti-Cancer Activities of Phytochemicals in White Button Mushrooms" - is available on request.

About City of Hope

City of Hope is a leading research and treatment center for cancer, diabetes and other life-threatening diseases. Designated as a Comprehensive Cancer Center, the highest honor bestowed by the National Cancer Institute, and a founding member of the National Comprehensive Cancer Network, City of Hope's research and treatment protocols impact care throughout the nation. Founded in 1913, City of Hope is a pioneer in the fields of bone marrow transplantation and genetics and shares its scientific knowledge with medical centers locally and globally, helping patients battling serious diseases. For more information, visit www.cityofhope.org.