



Laser Treatment Center

Tips, Advice & Information

SYDNEY: Fat cells may increase the risk of cancer by preventing damaged cells - the precursors of tumours - from being removed from the body, U.S. researchers say.

Previous studies have shown that fatty diets and obesity increase the risk of cancer and decrease the chance of successful cancer treatment. These effects have previously been attributed to blood hormone levels caused by excess fat, as well as difficulties in diagnosis and treatment of obese people.

But this new study, published in the U.S. journal, *Proceedings of the National Academy of Sciences*, suggests that fat cells may directly interfere with programmed cell death, called apoptosis - a natural process where the body kills off unwanted and damaged cells.

Cells that are irrevocably damaged, yet remain in the body, may start to undergo uncontrolled and abnormal cell division. The resultant mass is called a tumour, and can damage surrounding tissue, in some cases leading to cancer.

"The results of our studies suggest that fat cells secrete substances that inhibit apoptosis in cells with DNA damage and possibly also in tumours," said lead author Allan Conney, from Rutgers University in New Jersey.

In the study, one group of mice was given a running wheel in their cage for two weeks, while a control group was not. After two weeks, the exercising mice had lost 62 per cent of their fat, while fat levels in the control group remained the same. A third group of mice had their fat surgically removed, instead of exercising to reduce body fat.

After two weeks each group of mice was irradiated with ultraviolet light, which damages the DNA in cells and is the primary cause of skin cancer. Six hours after exposure, the area irradiated with UV light was tested for levels of apoptosis.

Compared with the control group, the rate of apoptosis was increased by 120 per cent in mice who used the running wheel, and by 107 per cent in mice who had their fat surgically removed.

In another case, mice were exposed to UV light twice a week for 33 weeks. By exercising to reduce fat, the number of tumours was reduced by 34 per cent and the average tumour size was reduced by more than 50 per cent.

According to Conney, this shows that removal of fat by exercise or surgery can help prevent the formation and growth of tumours. "We do want to find the anti-apoptotic substance secreted by fat," he said.

This study may also explain the link between green tea and reduced cancer rates: "Green tea, which contains caffeine ... increases locomotor activity, decreases tissue fat levels and inhibits UVB-induced skin cancer," the researchers said.

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