

## Extra Body Fat and Breast Cancer Risk

**Reza Hakkak \***

University of Arkansas for Medical Sciences, USA

**\*Corresponding Author:** Reza Hakkak, University of Arkansas for Medical Sciences, USA,

Email: [rhakkak@uams.edu](mailto:rhakkak@uams.edu)

Obesity has been epidemic in the US for over two decades. Obesity has been linked to the risk of development of various cancers, including breast cancer both in pre and postmenopausal women. Previously, we have reported that obesity is risk factor for breast cancer development using DMBA-induced mammary tumor model. Dehydroepiandrosterone (DHEA) is an over-the-counter dietary supplement used as an anti-cancer agent and anti-obesity supplement. The objectives of this study were to investigate the long-term effects of obesity using obese Zucker rat as model and DHEA treatment on body weight gain, breast cancer development and also serum DHEA, DHEA-S, IGF-1 and IGFBP-3 using 7,12-dimethylbenz(a)anthracene (DMBA)- induced mammary tumor model. We used 43 six-week-old obese female Zucker rats and we randomly assigned them ad libitum to a diet either chow as a control diet or chow with the addition of DHEA at a concentration of 6 g/kg of chow as a DHEA diet. We induced mammary tumors by orally gavaging all of the rats at age 50 days with 65 mg DMBA/kg body weight and were sacrificed 155 days post-DMBA treatment. Fifty-five percent (55%) of the control diet group developed mammary tumors, while no tumors were detected in the DHEA diet group ( $P < 0.001$ ). Obese rats fed the DHEA diet gained significantly less weight ( $P < 0.001$ ) and had an increased ( $P < 0.001$ ) serum DHEA and DHEA-S compared to control rats. Also, obese DHEA-Fed rats had significantly ( $P < 0.001$ ) lower serum IGF-1 and IGF-BP3. Our results suggest that DHEA treatment can reduce body weight gain by lowering serum IGF-1 and IGFBP-3 which might protect against breast cancer development caused by obesity. Also, these results suggest that extra body fat can be a risk factor for breast cancer development and by losing the extra body fat, the risk of breast cancer development can be eliminated. Supported by ABI to RH.

The body fat percentage (BFP) of a human or other living being is the total mass of fat divided by total body mass; body fat includes essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive functions. The percentage of essential body fat for women is greater than that for men, due to the demands of childbearing and other hormonal functions. The percentage of essential fat is 3–5% in men, and 8–12% in women (referenced through NASM). Storage body fat consists of fat accumulation in adipose tissue, part of which protects internal organs in the chest and abdomen. The minimum recommended total body fat percentage exceeds the essential fat percentage value reported above. A number of methods are available for determining body fat percentage, such as measurement with calipers or through the use of bioelectrical impedance analysis. The body fat percentage is a measure of fitness level, since it is the only body measurement which directly calculates a person's relative body composition without regard to height or weight. The widely

used body mass index (BMI) provides a measure that allows the comparison of the adiposity of individuals of different heights and weights. While BMI largely increases as adiposity increases, due to differences in body composition, other indicators of body fat give more accurate results; for example, individuals with greater muscle mass or larger bones will have higher BMIs.

The percentage of body fat in an individual varies according to sex and age. Various theoretical approaches exist on the relationships between body fat percentage, health, athletic capacity, etc. Different authorities have consequently developed different recommendations for ideal body fat percentages.

Please Submit your Manuscript to Cresco Online Publishing  
<http://crescopublications.org/submitmanuscript.php>