

# LIPIDOCTOR™

## Fat and Cellulite: Mars and Venus

Generally, women carry both cellulite and fat. Men just carry fat. Women carry cellulite primarily below the waist. The first difference between cellulite and fat is in the packaging. When we look at a piece of fatty tissue from the buttock of an adult female under the optical microscope, we see a structure that looks like overstuffed mattress ticking. There are vertical fibrous bands, between which are adipose cells. There is no clear boundary between the fatty tissue and the dermis of the skin. Adipose cells protrude into the dermis, raising it so that from the outside, it looks like lumps of cottage cheese pushing through the skin. In contrast, the fatty tissue from the buttock of a male appears smooth. There is a distinct, regular boundary between fat and dermis. (This anatomical difference is probably the result of the different testosterone/estrogen ratio ranges of the two sexes).

The second difference is the female buttock adipose cells' predisposition to fat creation. As a result, there are fewer adipose cells in the butt tissue of a male and those cells are smaller. The fat creation factories are more active in female butt adipose cells compared to male (due primarily to higher lipoprotein lipase activity in female butt adipose cells). In addition, the fat breakdown factories are less active in female butt adipose cells compared to male (due to greater Alpha 2 receptor number and sensitivity in the former). So even if a woman does everything right, in terms of exercise and nutrition, she is at a disadvantage with respect to fat reduction below the waist!

Just as men and women handle stored fat differently below the waist, so there are sex differences in fat storage in the abdomen. Between puberty and menopause, females preferentially lay down fat in the buttocks and hips (except when they are lactating). Males preferentially lay down fat in the abdomen (directly under the skin and also around their internal organs).

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(Factor one: Males have greater Alpha 2 receptor activity in abdominal adipose cells than do females who are not menopausal, ie. males have more deceleration of lipolysis in the abdomen than females. Factor two: In females, adipose cells in the hips and thighs have a preponderance of Alpha 2 receptors, whereas in the waist and above, there is a preponderance of Beta receptors. In non-lactating females prior to menopause, there is a difference in the activity of their two factories in the butt vs. the abdomen. There is decreased lipolysis and increased lipogenesis in butt adipose cells, so fat is preferentially laid down below the waist. In males, although their abdominal adipose cells are the same size as female abdominal adipose cells, there are many more of them).

This makes it easier to understand why fat is so much more readily depleted by exercise than is cellulite. It also indicates that the most effective time for women to exercise to reduce fat or protect against cellulite is during the nursing period following childbirth.

(Adrenaline and noradrenaline are released in response to exercise. In men, they trigger fat breakdown all over the body via Beta receptor stimulation. In women, net fat breakdown is triggered only in the waist and above by Beta stimulation. Below the waist, the relative preponderance of Alpha 2 receptors means that any increase in fat breakdown as a result of Beta stimulation will be countered by the new fat creation from Alpha 2 stimulation. This is one key reason for the existence of cellulite only in women and primarily below the waist).