

3.2.2.3.7.2 Erections with alprostadil and prostaglandin E1

Prostaglandins are a group of hormone-like substances; like hormones they play a role in a wide variety of physiological processes. Michael W. Davidson of the Florida State University: "Prostaglandins act in a manner similar to that of hormones, by stimulating target cells into action. However, they differ from hormones in that they act locally, near their site of synthesis, and they are metabolized very rapidly. Another unusual feature is that the same prostaglandins act differently in different tissues."

While the general public has a fairly good idea on hormones and their functions, this is clearly not the case with prostaglandins. Arthritis and rheumatism sufferers may know that prostaglandins have something to do with their particular condition, but as prostaglandins have a part in what makes people suffer from arthritis and rheumatism, as well as what alleviates their condition, there is considerable confusion.

The primary error is that people often just talk about prostaglandins in general. A patient may relate to a friend: "The doc told me that I have rheumatic pain because my body produces too much prostaglandin." And because of the name *prostaglandin* which clearly refers to the prostate gland, the patient, if male, may even think that something is wrong with the particular organ.

But what's wrong in this case is his understanding.

First of all, to talk about too much prostaglandin is rather foolish. This is the case because, like hormones, specific prostaglandins often have somehow contrary functions. There are prostaglandins that aggravate inflammatory conditions, and there are prostaglandins that alleviate them. Most prostaglandins have nothing to do with the prostate. The group of physiologically active substances is named prostaglandins because the first prostaglandin was, incidentally, found in semen and thought to originate from the prostate gland.

There is one specific prostaglandin that indeed plays a role in the male sexual tract, prostaglandin E1. It is marketed under the name Caverject (alprostadil) as a treatment for erectile dysfunction.

In the words of medical researcher A. Lea: "Intracavernous alprostadil (synthetic prostaglandin E1) is a vasodilating agent which acts by relaxing the smooth muscles of the corpus cavernosum and by increasing the diameter of cavernous arteries; this leads to erection."

But as the synthetic prostaglandin E1 needs to be injected into the penis prior to intended sexual intercourse, it has never taken off in the same manner as Pfizer's Blue did. Prostaglandin E1 has other functions, not at all related to the facilitation of erections. It plays a role in protecting the gastrointestinal tract, and a synthetic prostaglandin E1 is marketed worldwide to protect from gastrointestinal bleeding that may be caused by the consumption of large amounts of painkillers (by rheumatism and arthritis sufferers). The synthetic prostaglandin E1 is usually sold under the brand name Cytotec. The drdoc on-line website describes it as follows:

"Cytotec (Misoprostol) is a synthetic analogue of Prostaglandin E1 (PGE1). Like endogenous PGE1, Cytotec® exerts a protective effect on the gastrointestinal mucosa by increasing mucus and bicarbonate ion secretion and by increasing mucosal blood flow. In addition, Cytotec® inhibits acid secretion. Naturally occurring PGE1 is ineffective after oral administration because it is unstable in an acid environment; it is also quickly degraded when administered parenterally, giving it no practical clinical utility. However, the structural modifications to naturally occurring PGE1 that led to the development of Cytotec® resulted in an orally active drug with a duration of action that makes it clinically useful."

Misoprostol, as synthetic analogue of Prostaglandin E1, in sufficiently high dosages, also causes uterine contractions. In a number of mainly South American countries, women use high dosages of Cytotec to induce illegal abortions or abortions outside of the supervision of physicians.

Prostaglandins are usually named by letters and numbers: A1, A2... E1, E2... They are named by chemical similarity, not by the similarity

of physiological effect. Prostaglandin E2, for example, has nothing to do with erections of the male sexual organ. Its function is in causing labor pains by inducing contractions, and it's an important pharmaceutical agent in the OB.

For some prostaglandins, it makes quite a difference what we eat, or rather, what fats we eat. By and large, omega-6 fatty acids as they are found in meats and most vegetable oils stimulate the production of inflammatory prostaglandins, while the consumption of omega-3 fatty acids stimulates the production of anti-inflammatory prostaglandins. For this reason, marine fatty acids such as cod liver oil have long been known to ameliorate arthritic and rheumatic conditions. Flax seed, evening primrose oil, borage oil and canola oil are plant products stimulating the production of anti-inflammatory prostaglandins. Evening primrose oil is therefore used by women to manage menstrual pains that are caused by contraction-facilitating prostaglandins.