**Introduction:**

Current models of normal female sexual response define three phases - sexual desire (libido), sexual arousal or excitement, and orgasm. Desire, arousal and orgasm are complex responses in the female body, and are dependent on hormonal balance, healthy cardiovascular and nervous system function as well as healthy emotions and relationships.

The physiologic changes that occur during sexual arousal in women begin with an increase in length and diameter of the clitoris, and vasocongestion of the clitoris, vagina, vulva, uterus, and possibly, the urethra. This occurs in response to relaxation of the smooth muscle of the clitoris and dilation of the arterial smooth muscle, promoting increased blood flow to the tissues. Lubrication of the vaginal epithelium is also associated with the increased blood flow.(1)

Research suggests that nitric oxide and cyclic guanosine monophosphate (cGMP) mediate the arterial smooth muscle relaxation of the clitoris in the same manner as that found in the male penis.(3,4) With sexual stimulation, nitric oxide is synthesized from L-arginine (via nitric oxide synthase) in the nerve and vascular tissue of the clitoris or the penis. Nitric oxide stimulates the release of guanylate cyclase that converts guanosine triphosphate (GTP) to cGMP. cGMP relaxes the smooth muscles of the corpus cavernosum & arterioles in the clitoral and penile tissues resulting in vasocongestion of these tissues.(2, 3)

Stimulation of the autonomic nervous system is thought to be a key component of female sexual arousal. Sympathetic nervous system activation involving both epinephrine and norepinephrine appears to facilitate sexual arousal in women.(2)

Other neurotransmitters and neuropeptides are important in sexual arousal. Both dopamine and histamine have been shown to enhance erectile activity in men, and may play a role in female sexual arousal as well.(2, 5, 14)

Progesterone, estrogen and testosterone have been shown to be important in the genital vasocongestion of sexual arousal in women.(2) A recent animal study shows that progesterone up-regulates nitric oxide synthase activity in vaginal tissue. This research suggests that progesterone may play an important role in nitric oxide dependent relaxation of vaginal smooth muscle, and the vasocongestion of the vagina during sexual arousal.(6) Estrogen is important for normal clitoral and vaginal sensation, for its vasodilating effects, and in the normal expression of nitric oxide synthase in clitoral and vaginal tissues.(1) Studies with testosterone replacement have demonstrated that it can increase female genital arousal and sensation, as well as increase vaginal vasocongestion.(7,8) Clinically, testosterone cream applied to the clitoris is reported to be effective for improving sensation.(9)

**Product Description:**

Emerita Response Cream is designed by female physicians to naturally support a woman’s sexual arousal process. It specifically supports the process of clitoral and vaginal vasocongestion with amino acids, herbal extracts and essential oils that function in nitric oxide-cGMP smooth muscle relaxation, as precursors for the formation of key neurotransmitters and neuropeptides, as topical vasodilators, and as warming stimulants.

**Recommended Use:**

Dispense a small amount of the cream onto your fingertip. Apply directly to the external vulvar tissue over the clitoral region. Rub into area gently and thoroughly. Re-apply as desired. Emerita Response Cream contains ingredients which produce a warm & tingling sensation. The sensation may be enhanced by massaging and stimulating the clitoral area. Response time may vary. Individual response may improve with successive use.

**Cautions and Contraindications:**

Application is intended for external vaginal use. Emerita Response Cream is not a contraceptive and does not contain spermicide. Does not prevent sexually transmitted diseases. Please read the following prior to product use:

Consult a qualified health care practitioner before using in conjunction with vaginal or prescription medications, during pregnancy, or if you have any medical condition. Do not use if you are allergic to any ingredient it contains. Do not apply to broken or damaged skin. If irritation occurs, discontinue use. Do not use around the eye area. Product not intended for children. Keep out of reach of children. Store at room temperature.

**Formulation:**

Water, Glycerin, L-Arginine, L-Phenylalanine, L-Tyrosine, Sorbitol, Sucrose Stearate, Ginger (Zingiber officinalis) Extract, Licorice (Glycyrrhiza glabra) Extract, Rosemary (Rosmarinus officinalis) Oil, Niacin, L-Histidine, Ginseng (Panax ginseng) Extract, L-Menthol, Cinnamon (Cinnamomum cassia) Oil, Bergamot (Citrus bergamia) Oil, Cetostearyl Alcohol, Ascorbyl Palmitate, Isopropyl Myristate, Octyl Palmitate, Carbomer, Triethanolamine.
L-Arginine is the amino acid precursor for nitric oxide formation. The enzyme nitric oxide synthase catalyzes the generation of nitric oxide from L-arginine.(10) Animal studies suggest that L-arginine can promote the nitric oxide-cGMP pathway and the relaxation of both clitoral and penile corpus cavernous.(5, 11) Human studies suggest improvement of sexual arousal with L-arginine supplementation.(12, 13)

L-Tyrosine is the amino acid precursor for dopamine, norepinephrine and epinephrine synthesis, important neurotransmitters in the process of sexual arousal.(2, 5)

L-Phenylalanine is the amino acid precursor for tyrosine synthesis.

L-Histidine is the amino acid precursor for histamine synthesis. Histamine is a natural vasodilator, and research suggests that it plays a role in the erectile response of human corpus cavernosum.(14)

Panax Ginseng - one animal study has shown that the ginsenosides from Panax ginseng enhance neurogenic vasodilatation of the corpus cavernosum; and this appears to be mediated by the release of nitric oxide from endothelial cells and perivascular nerves.(15, 16) Other studies have shown that the ginsenosides relax pulmonary blood vessels, and that they appear to increase the conversion of L-arginine to nitric oxide.(17, 18)

L-Menthol, a compound found in the volatile oils of the mint family, may help promote vasodilation through smooth muscle relaxation.(19) It is often used in cosmetics for its tingling, stimulating properties. Research has shown it is helpful to promote the absorption of other topical ingredients.(20)

Licorice Extract contains glycyrrhetinic acid, known to inhibit the enzyme 5β-reductase, important for the metabolism of hormones including testosterone and progesterone.(21) Research suggests that progesterone may be important in the vasocongestion of vaginal tissues.(6) Studies have shown that testosterone increases vaginal vasocongestion as well as increased genital arousal and sensation in women.(7, 8) Licorice may help to keep levels of both progesterone and testosterone higher by slowing their metabolism.

Niacin is well known for its ability to cause cutaneous vasodilation- the “niacin skin flush”. Topical applications of niacin & esters of nicotinate have been shown to produce local vasodilation of the skin.(22, 23)

Ginger Extract is known for its warming effect, as well as its rubefacient effect when applied to the skin. An animal study with ginger demonstrated relaxation of corpus cavernosum with increased cGMP levels.(24)

Rosemary Oil is known for its stimulating and rubefacient properties.(25) Rosmarinic acid is well absorbed from the skin and rosemary extract relaxes smooth muscle.(26)

Cinnamon Oil is known for its warming and stimulating effects. It has historically been used as a female sexual stimulant. Cinnamic aldehyde, the principle constituent of cinnamon oil, has been shown to produce cutaneous vasodilation when applied to the skin.(27)

Bergamot Oil is known for its rubefacient effects.

THESE STATEMENTS HAVE NOT BEEN EVALUATED BY THE FOOD AND DRUG ADMINISTRATION. THIS PRODUCT AND THESE STATEMENTS ARE NOT INTENDED TO DIAGNOSE, TREAT, CURE, OR PREVENT A DISEASE.

Selected References: