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Different hormone therapies affect brain function differently

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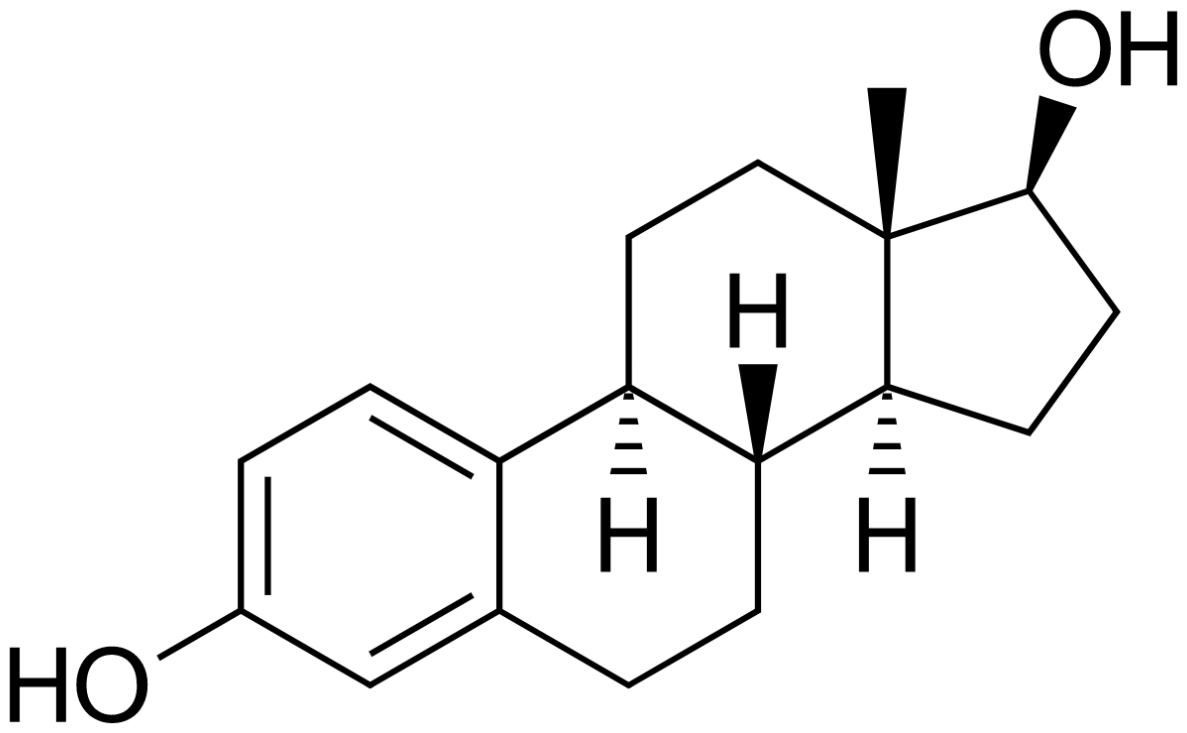

Estradiol, the major estrogen sex hormone in humans and a widely used medication. Credit: Public Domain

Sex hormones influence the structure and function of the brain, but little is known about the effect of hormone therapies (HT) on changes in the brain during menopause. A new study shows smaller increases in

structural brain changes related to aging were associated with hormone-level changes from transdermal estradiol or oral conjugated equine estrogen. Study results are published online in *Menopause, the journal of The North American Menopause Society* (NAMS).

Age-related changes in learning and memory have been associated with changes in the structure of the brain. Visually, such structural changes can be seen through magnetic resonance imaging in what appear as bright white spots in the brain (known as white matter hyperintensities). These changes in brain structure and in cognitive function may, in part, be related to the lower estrogen levels resulting from menopause.

In a new study involving participants from the Kronos Early Estrogen Prevention Study, researchers investigated the link between the changes in hormone levels (from both the brain and the ovary) with different HT formulations and structural changes in the brain associated with aging compared with placebo. They found that smaller increases in these age-related structural brain changes were linked to decreases in follicle-stimulating hormone in women taking transdermal estradiol and higher levels of estrone (a particular form of estrogen commonly found in postmenopausal women) in women in both HT groups (transdermal estradiol and oral conjugated equine estrogens).

Researchers theorized that the differences may likely be in how the various HT formulations are metabolized. Although an oral administration is further metabolized in the liver, the transdermal hormones are absorbed directly into the peripheral circulation before being metabolized in the liver. Additional research is needed to evaluate the effect of different doses of various oral and transdermal hormones on the change in white matter hyperintensities.

Study results appear in the article "Associations of pituitary-ovarian hormones and white matter hyperintensities in recently menopausal

women using hormone therapy."

"This study found that pituitary and ovarian hormone levels are linked to structural brain changes associated with aging in recently menopausal women using hormone therapy and that there are differences in these associations depending on the hormone therapy formulation used. Additional study is needed to determine whether dosages of hormone therapy also affect these associations and to determine what the clinical implications of these findings are for menopausal women," says Dr. Stephanie Faubion, NAMS medical director.

Provided by The North American Menopause Society

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