

THE EFFECTS OF ESTROGENS ON BRAIN PLASTICITY

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Introduction:

- Estrogens have effects not only on gonads but also on the hippocampus and the prefrontal cortex area.
- The fluctuations of estrogen levels directly influence cognitive functions, an important point in menopause management.

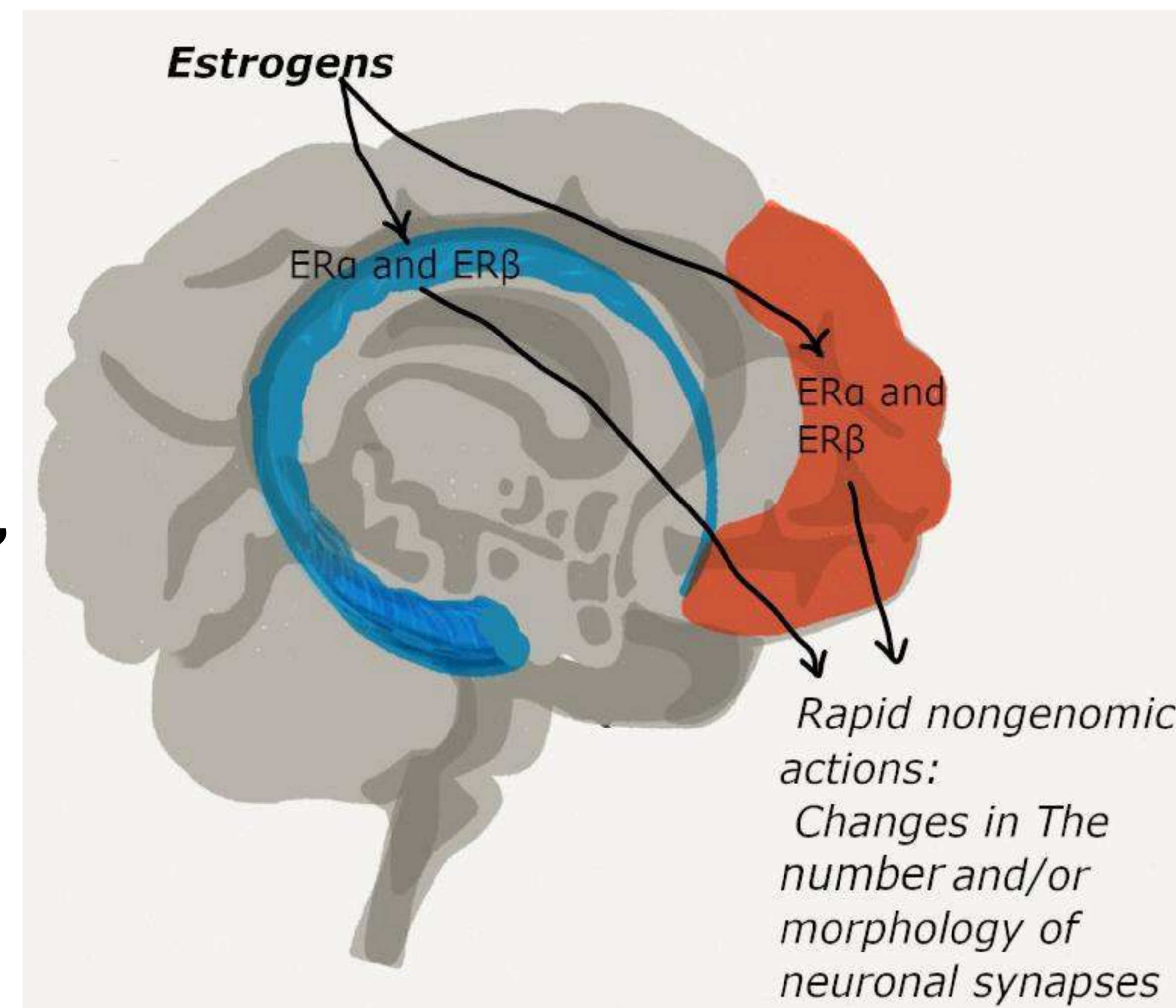
Keywords: estrogen, menopause, hormone therapy, dementia.

Purpose:

To study the importance of estrogens in neuroprotection and the effectiveness of hormonal therapy depending on the age, type (natural/ induced) and stage (early/ late) of the menopause.

Material and methods:

This is the synthesis of 20 medical research articles published in the period of 2014-2019 found with the research motors PubMed, NCBI and Sciencedirect.



Results:

- Clinical studies have proved that estrogens mediated effects are a result of interaction with the receptors ER α , ER β and GPER1 from the neurons of the hippocampus and prefrontal cortex.
- Estrogens mediate:
 - the dendritic density growth thus helping the formation of new synapses,
 - stimulating the glycolytic over ketogenic metabolism,
 - maintaining Ca⁺ homeostasis.

These effects are important for the optimal functioning of the memory and for the reduction of neurodegenerative processes.

- The lower levels of circulating estrogens during menopause can cause:
 - ⚡ memory alterations,
 - ⚡ neural hypometabolism,
 - ⚡ risk of developing dementia.

Conclusions:

Hormone replacement therapy for the promotion of neuroprotection shows efficacy depending on the time of administration and reported to the natural or surgical menopause onset.

