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Potential neurological benefits of progesterone and progestins used in contraception

R Sitruk-Ware (US) [1], N Kumar (US) [2], M El-Etr (FR) [3], M Schumacher (FR) [4]

Progestogens including natural progesterone (P) and synthetic progestins combined with estrogen, are largely used in hormonal contraception. There is strong evidence of specific differences between natural and synthetic molecules and there is no class-effect related to beneficial or adverse effects. P regulates distinct processes in the nervous system. In animal experiments, P and Nestorone® (NES) , a highly selective non-androgenic progestin, trigger neuroregeneration, myelin repair and brain damage repair. In addition, both steroids promote the remyelination of axons by oligodendrocytes after demyelination in mouse models, and induce positive effects on hippocampal neurogenesis and cell viability, leading to possible memory benefits. A positive effect of P and NES was also found in other experimental models of stroke and amyotrophic lateral sclerosis (ALS). These protective effects were mediated via progesterone receptors (PR). In contrast to P, NES and its reduced metabolites are unable to activate the GABAA Receptors (R), suggesting that the neuroprotective and myelin regenerative effects of NES are mediated via PR binding and not via the GABAAR.

The potential neurological benefits of natural P and related structures such as NES targeting PR with high specificity, may prove useful as novel therapies for men and women with neurodegenerative disorders.

[1] Population Council, NEW YORK, [2] Population Council, NEW YORK, [3] INSERM U1195, & University Paris Sud, Le Kremlin-Bicêtre, [4] INSERM U1195 & University Paris Sud, Le Kremlin Bicêtre