



Si attesta che il Prof./Dr.

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PERMANENT EFFECTS OF EARLY POSTNATAL GENISTEIN ADMINISTRATION ON TH POSITIVE CATECHOLAMINERGIC NEURONS IN MOUSE

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Genistein (GEN) is a phytoestrogen present in high concentration in edible plants such as soy, largely present in human and animal diet. It has been reported that phytoestrogens are able to exert both estrogenic and anti-estrogenic activities, which may have a beneficial or detrimental effect according to the administration paradigm, sex and age of exposure. GEN administration during developmental critical periods may interfere with the formation of specific steroid-sensitive neuronal circuits, leading to irreversible behavioral and morphological alterations in adults even at a much lower dose than the one considered non-toxic by law.

We have previously shown that early postnatal administration of GEN (at doses similar to that of infant formulas) may affect the expression of neuronal specific nitric oxide synthase in specific hypothalamic circuits. Nitrgergic system is involved in the control of many behaviors by interactions with other neurotransmitters such as catecholamines, for this reason, we investigated whether GEN treatment may affect tyrosine hydroxylase (TH, a specific marker for catecholaminergic neurons) expression in selected hypothalamic and mesencephalic populations.

GEN treatment affected only hypothalamic TH+ neurons and had no effect on mesencephalic neurons. Similarly to the effect previously observed for nNOS and AVP, this effect is sexually dimorphic, but, it was not mimicked by E₂ treatment.

Present and past results indicate that GEN exposure in early postnatal life may result in permanent alteration of several widely diffused neurotransmitters' systems, which control reproduction, anxiety behavior, energetic metabolism and many other behaviors. These results are important for both human health and animal welfare, and may have relevant economic consequences. In particular, soy based supplements are largely used for farm animals like in pigs that are commonly affected by hypo-fertility: the soy phytoestrogens could be one of possible causes.