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New perspectives for Pharmacological intervention in young and old persons with Trisomy 21(Down syndrome)

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Abstract

Trisomy 21 (DS) is a genetic disorder that results from the triplication of entire or part of chromosome 21 (Chr21) and its occurence is 1 every 1000/1500 live births without family inheritance known. It is so far considered as the major genetic cause of intellectual disability. The brain development defictis induce intellectual disabilities which affect language, learning, memory but also motor, sensory and sleep deficits. Moreover, although their life expectancy has dramatically increased since fifty years, it is reported that individuals with DS exhibit accelerating aging in many systems including also behavioural abnormalities and early neurodegeneration. Thus early pharmacological intervention is necessary to improve daylife for children and young adults in order to live normally in the general population, but also to prevent early aging. Several early studies support the link between the DS phenotype and an increased risk of Alzheimer (A D) development with an incidence of dementia which increases dramatically by the age of 60 years. Although the AD neuroanatomopathology is present in virtually all adults, all adults over 60 years will not develop dementia. As all the chromosome 21 genes are known and they are good trisomic mouse and rat models to study DS. Thus many new pharmacological pathways are on development using these models either for early intervention to increase intellectual abilities or to prevent the hallmarks of early AD. These approaches for various pharmacological interventions will be discussed.

Biography

Jacqueline London is a professor at Université de Paris -VII University and president of the association for Down's syndrome.

Publication

1. Alterations in the Serotonin and Dopamine Pathways by Cystathionine Beta Synthase Overexpression in Murine Brain
2. Overexpression of the DYRK1A Gene (Dual-Specificity Tyrosine Phosphorylation-Regulated Kinase 1A) Induces Alterations of the Serotoninergic and Dopaminergic Processing in Murine Brain Tissues
3. Modification of neurotransmitters expression in various brain areas of transgenic mice for APP or/and Dyrk1A, two chromosome 21 genes involved in Alzheimer disease and Down syndrome
4. EGCG (EpiGalloCatechine Gallate) might be beneficial for wake consolidation
5. The Amyloid Precursor Protein (APP) induces sleep recovery impairment after sleep deprivation in a murine model of Trisomy 21 (Down Syndrome)
6. APP/SOD1 overexpressing mice present reduced neuropathic pain sensitivity

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