Laboratory title: INRA UMR 1286 - Sophie Layé

Supervisor

Name: Veronique PALLET

Thesis title: Vitamin A and prevention of Alzheimer’s disease: interaction with glucocorticoids

Keywords: Vitamin A, retinoic acid, Alzheimer’s disease, glucocorticoids, memory

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Abstract

Vitamin A and its metabolites, the retinoids, modulate several physiopathological processes. It is now well admitted that cerebral hypoactivity of retinoid signaling participates to the etiology of “regular” age-related cognitive decline as well as to that of Alzheimer’s disease (AD). Moreover, vitamin A exerts its beneficial effects on neurobiological processes via a modulation of glucocorticoid activity. The objective of the present project is to study the role of vitamin A in the prevention or correction of the occurrence of cerebral AD lesions and the consequences on learning and memory performances with a particular focus on glucocorticoid activity.

Retinoid effects (nutritional supplementation or retinoic acid injections) will be studied on two mouse models of AD: (1) an intracerebrovascular injection of Abeta peptide which induces in mice all the typical AD brain alterations and a glucocorticoid hyperactivity. (2) a tritransgenic mouse model suitable to study nutritional supplementation.

The link between retinoid treatment, the genesis of AD brain lesions (amyloid plaques, phosphorylated Tau protein, neuroinflammation…) and glucocorticoid activity will be studied on these models. The functional impact of the treatment will be assessed through behavioral methods. This project will use biochemical, cellular and molecular approaches and behavioral investigations.

Qualification required

Master 2 level: Neurosciences, or Nutrition or Cellular and molecular biology or physiology. Handling of mice, motivation.