

Best of Allergologie

Module : Immunologie

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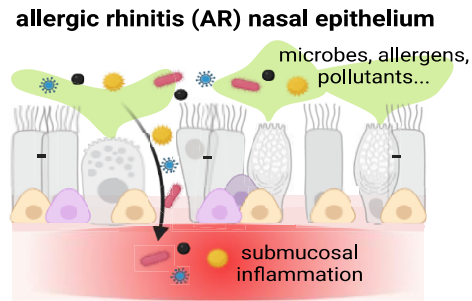
Cellules basales nasales et rhinite allergique

Méthodes

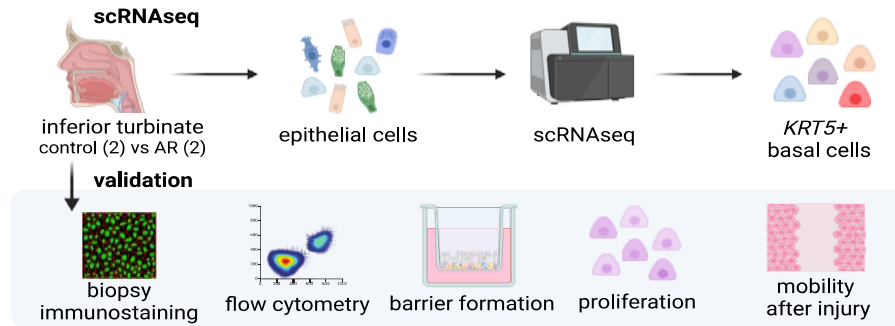
Comparaison des phénotypes des cellules basales (patients allergiques vs patients sains)
Séquençage, analyse par cytométrie en flux et immunofluorescence

The nasal basal cell population shifts towards a diseased phenotype with impaired barrier formation capacity in allergic rhinitis

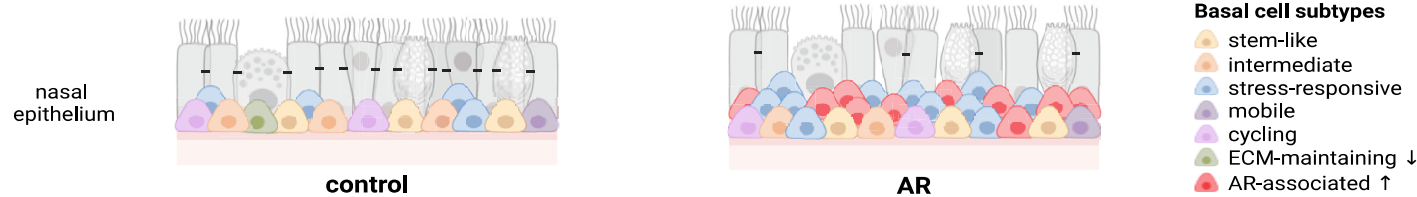
Background



Methods



Results



AR basal cells



basal cell hyperplasia
% HRH1+, PAR2+ ↑
barrier formation ↓
mobility after injury ↓

AR-associated subset



KRT5
ITGA2^{hi}

genes ↑

COX2 (PTGS2), PAR2 (F2RL1), HRH1, KRT6A, CXCL8, IL6R

pathways ↑

prostaglandin metabolism
wound healing
stress response

ex vivo

proliferation rate ↑



Résultats

Répartition hétérogène des Cellules basales

Dans la rhinite allergique:

- Augmentation du nombre de cellules
- Barrière altérée
- Diminution des capacités régénératrices
- Augmentation d'expression d'HRH1 (Récepteur de l'histamine) et de PAR2 (Récepteur activé par de nombreux allergènes et par le tryptase)
- Dialogue entre les mastocytes et les cellules basales, amplifié dans la rhinite allergique

Formononetin's mechanisms in regulating IgE production in plasma cells and degranulation in mast cells

Rationale

- Formononetin is an O-methylated isoflavone presents in herbs
- Multiple therapeutic effects known (anticancer, antiinflammatory, antimicrobial, antihypertensive)

Objectives

- To evaluate the potential therapeutic mechanisms of formononetin in regulating IgE secretion and mast cell activation

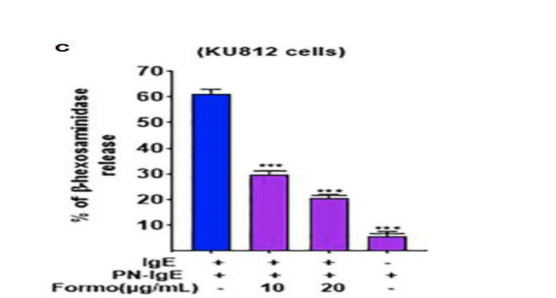
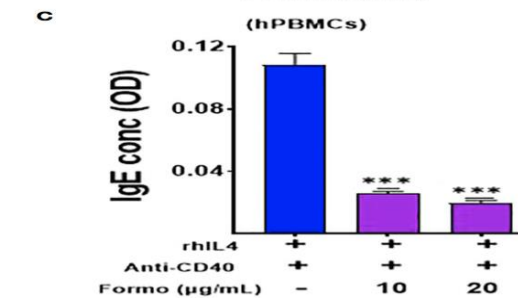
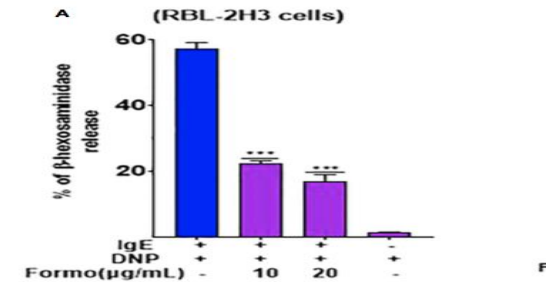
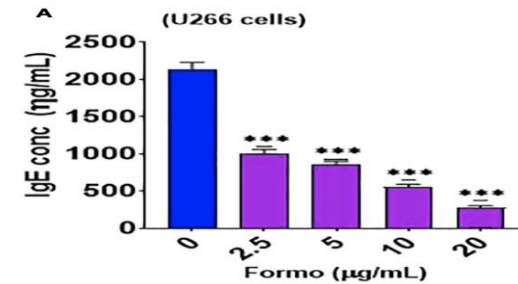
Methods

- In vitro only** : Humain IgE producing myeloma cell culture – isolation of peripheral blood mononuclear cells from food allergic patients and cell culture – computational modeling to analyse mechanistics targets of formononetin from various databases

Results

- IgE production in plasma B cell line and peripheral blood mononuclear cells
- Beta- hexosaminidase release in basophil cell lines RBL-2H3 and KU812 cells
- Without cytotoxicity
- Regulates Genes expression

➔ **A potential candidate for treating food-related anaphylaxis**



Effects of *Lactobacillus Acidophilus* KBL409 on atopic dermatitis

Rationale

Probiotics can prevent or treat atopic dermatitis (AD) via modulation of immune responses and gut microbiota
Skin tissues of patients with AD have high concentrations of IgE and infiltration of lymphocytes, mast cells, eosinophils, neutrophils

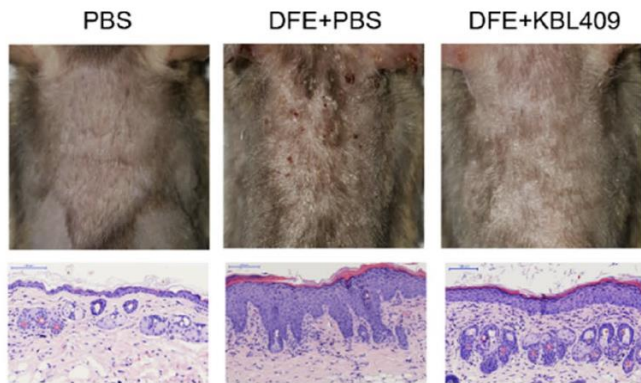
Objectives

Evaluation of the effects of oral administration of *Lactobacillus Acidophilus* KBL409, a potential probiotic for the treatment of AD

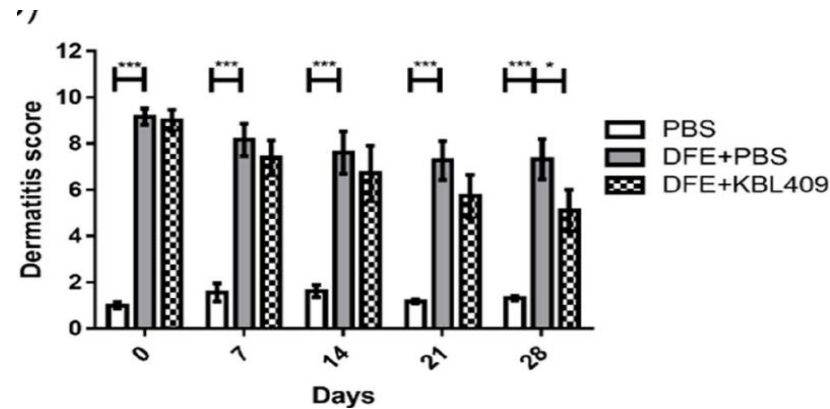
Methods

Cultivation of *L.acidophilus* KBL409- House dust mite (*Dermatophagoide farinae*) : **In vivo AD induced mouse model**
28 days of oral administration

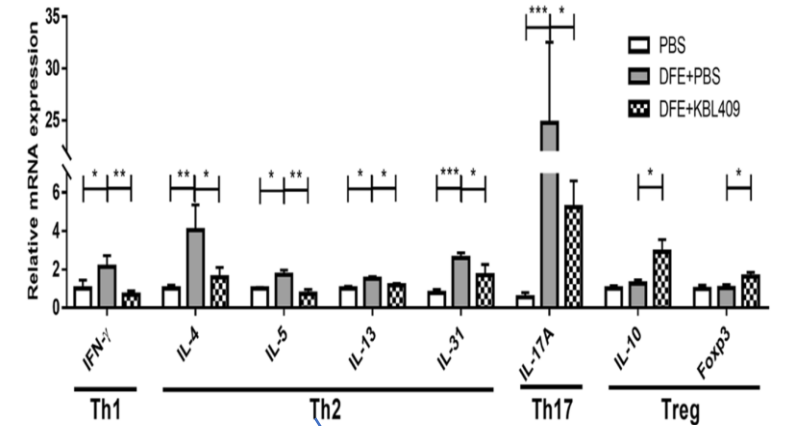
Results



Hyperkeratosis & epidermal thickness



Dermatitis score In ear or dorsal skin



-Th1 cytokine IFN-γ
-Th2 (IL-4, IL-5, IL-13, IL-31)
-Th17 (IL-17 A)
-IL10
-Foxp3

⇒ This probiotic could be a promising treatment for AD treatment by modulating the immune responses and restoring the gut microbiota

Preclinical efficacy of peanut-specific IgG4 antibody therapeutic IGNX001

Rationale

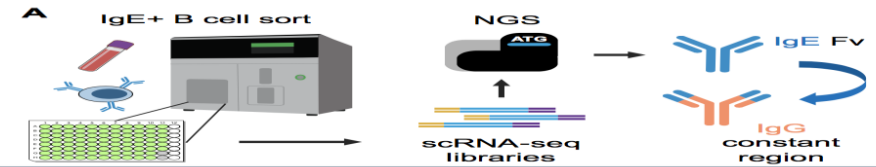
- Existing therapeutic strategies are challenged by long times to achieve effect and often require frequent administration
- Functionally suppressive allergen-specific IgG4 antibodies increase in concentration over the course of desensitization

Objectives

- To develop a novel treatment approach based on the known protective effects of allergen-specific IgG4 antibodies.
- To evaluate the specificity, affinity, and activity of these recombinant IgG4 mAbs.

Methods

- In vitro** : mast cell activation tests, basophil cell activation
- In vivo** : mouse model



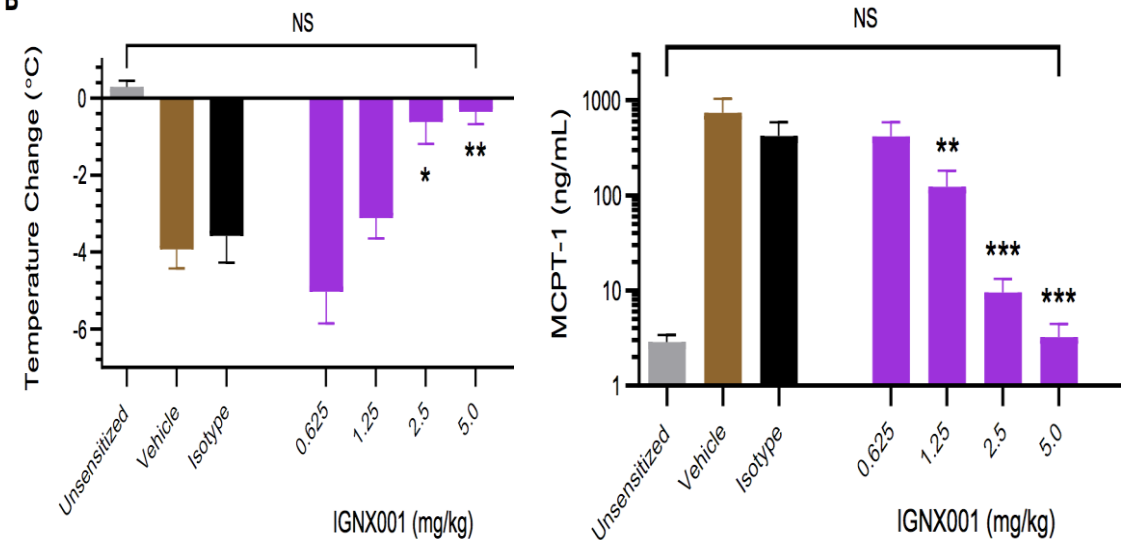
Results

- Dose dependent effects of IGNX001 on the Hypothermic effect or serum MCPT-1 release in peanut allergic animals**

- Human peanut-specific IgE mAbs predominantly target immunodominant epitopes on Ara h 2 and Ara h 6 and that recombinant IgG4 mAbs effectively block these epitopes.**

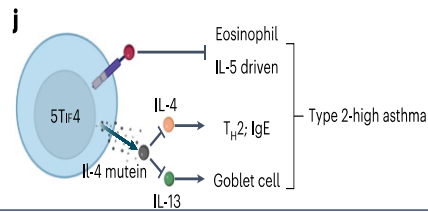
- Faster, more effective alternative to current therapies, no allergen administered**
- Potential to help change peanut allergy management, reducing severe reaction risks and improving quality of life for millions worldwide**
- Further clinical investigations with the human immune system are needed**

B



Rôle et impact des cellules CAR-T à longue durée de vie dans l'asthme

Définition



Cellule CAR-T : lymphocyte T qui porte à sa surface un récepteur chimérique
Innovation thérapeutique personnalisée
AMM dans les hémopathies malignes

Objectifs

Développement de cellules CAR-T ciblant les éosinophiles chez les patients asthmatiques

Méthodes

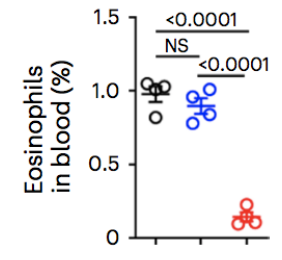
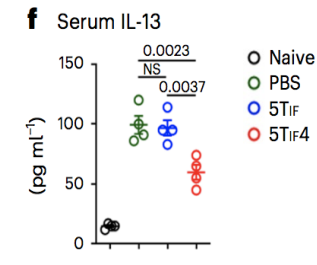
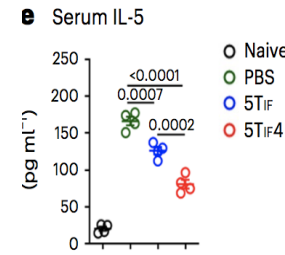
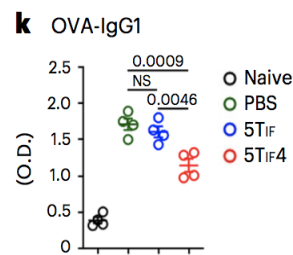
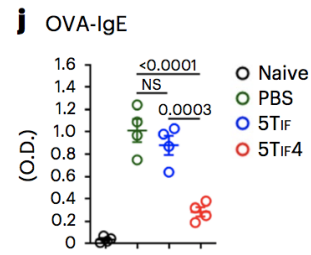
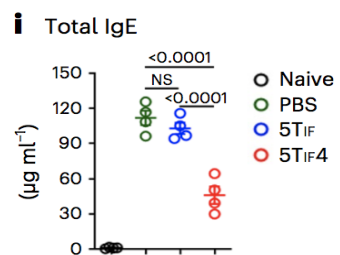
In vivo et in vitro

Cibles : récepteur à l'IL-5 (surface des éosinophiles) et voie Th2 par production d'un analogue inactif de l'IL-4

Résultats

Résultats:

- score clinique chez la souris ↓ IgE totale, ↓ IgE spécifiques ↓ éosinophiles ↓ IL-5 ↓ IL-13



Discussion: Rémission à long terme de l'asthme en 1 seule administration