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Probiotics in paediatric patients with an allergy to cow's milk proteins

Submission date
18/11/2021

Recruitment status
No longer recruiting

Registration date
29/12/2021

Overall study status
Completed

Last Edited
27/03/2023

Condition category
Other

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
An allergy to cow's milk proteins is one of the most frequent food allergies during early childhood. It is not completely known how it develops, although changes in intestinal microflora (bacteria) have been found to influence immune tolerance to milk proteins. Probiotics (live bacteria and yeasts) have been proposed for the treatment and prevention of food allergies. The aim of this study is to investigate the anti-allergenic effect of a mixture of three Bifidobacterium strains in children with an allergy to cow's milk proteins before and after a 45-day treatment.

Who can participate?
Children aged 6-12 months with an allergy to cow's milk proteins on a cow's milk protein exclusion diet

What does the study involve?
All participants receive the same treatment. Following the initial visit, the children start a commercially available extensively hydrolyzed casein (protein) formula and treatment with the probiotic mixture for 45 days. Blood samples are collected soon before the probiotic treatment and at the end of the probiotic supplementation. After 45 days from the suspension of the probiotic, while the participants are still on a milk protein elimination diet, another blood sample is collected to better understand the specific effects of Bifidobacterium.

What are the possible benefits and risks of participating?
The Bifidobacteria could help increase tolerance to cow's milk proteins and could provide a significant benefit in the treatment of cow's milk protein allergy.

Where is the study run from?
University of Campania "Luigi Vanvitelli" (Italy)

When is the study starting and how long is it expected to run for?
January 2015 to April 2018

Who is funding the study?
AOU Università degli Studi della Campania Luigi Vanvitelli (Italy)

Who is the main contact?
Caterina Strisciuglio
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
07/2016

Study information

Scientific Title
Bifidobacteria improve immune tolerance in paediatric patients with an allergy to cow’s milk proteins

Study objectives
Many experimental and clinical studies have analyzed the role of probiotics in the prevention and treatment of allergic diseases but only a limited number of studies evaluated the in vivo probiotic effect on pediatric patients affected by the allergy to cow’s milk proteins (CMA). It is hypothesized that Bifidobacteria could have a beneficial effect on the acquisition of oral tolerance to cow's milk proteins.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 16/12/2015, the Institutional Review Board of the University of Campania “Luigi Vanvitelli” (Via Santa Maria di Costantinopoli 104, 80138 Naples, Italy; +39 (0)815664008; comitatoetico@unicampania.it), ref: 07/2016

Primary study design

Interventional

Study design
Prospective non-randomized pilot trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Cow's milk allergy

Interventions
Following the diagnosis of cow's milk allergy, the children start a commercially available extensively hydrolyzed casein formula (EHCF, Nutramigen, Mead Johnson, Rome, Italy) and treatment with the probiotic mixture for 45 days (5 billion colony-forming units/day (bnl CFU /die), specifically 3 bnl CFU/die of Bifidobacterium Longum BB536; 1 bnl CFU/die of Bifidobacterium Infantis M-63; 1 1 bnl CFU/die of Bifidobacterium breve M-16V).

Blood samples are collected soon before the probiotic treatment (baseline, T0) and at the end of probiotic supplementation (T1). Further, after 45 days from the suspension of the probiotic, while the patients were still on a cow's milk protein elimination diet, another blood sample was collected to better understand the specific effects of Bifidobacterium (T2)

Intervention Type
Supplement

Primary outcome(s)
The frequency of various lymphocyte subsets in peripheral blood (e.g. T cells [CD3+, either the helper CD4+ and the cytotoxic CD8+ cells], and B cells [CD19+]) evaluated by flow cytometry at baseline, after 45 days of probiotic treatment (T1) and 45 days from the suspension of the treatment (T2)

Key secondary outcome(s)
The percentage of degranulation activity of circulating basophils evaluated in fresh blood samples using the basophilic activation test (BAT) after in vitro exposure to cow’s milk, casein, lactalbumin and lactoglobulin reported at baseline, at T1 and T2

Completion date
30/04/2018

Eligibility

Key inclusion criteria
Paediatric patients with an allergy to cow’s milk proteins (CMA)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Sex
All

Total final enrolment
8

Key exclusion criteria
1. Consumption of prebiotic or probiotic products, and/or antibiotics in the previous 4 weeks
2 . A history of cow's milk-induced anaphylaxis
3. Eosinophilic disorders of the gastrointestinal tract
4. Food protein-induced enterocolitic syndrome
5. Concomitant chronic systemic diseases
6. Other gastrointestinal disease

Date of first enrolment
15/07/2016

Date of final enrolment
30/07/2017

Locations

Countries of recruitment
Italy

Study participating centre
University of Campania "Luigi Vanvitelli"
Via Luigi De Crecchio, 4
Napoli
Italy
80138

Sponsor information

Organisation
Azienda Ospedaliera Universitaria Università degli Studi della Campania Luigi Vanvitelli

ROR
https://ror.org/02p9ey581

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Azienda Ospedaliera Universitaria Università degli Studi della Campania Luigi Vanvitelli

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Prof. Caterina Strisciuglio (caterina.strisciuglio@unicampania.it), including the demographic and clinical characteristics of the study population, and data from experiments carried out in the laboratory.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		23/03/2023	27/03/2023	Yes	No