

# Personalized nutrition for cancer patients in chemotherapy treatment.

<b>Submission date</b> 13/05/2019	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 20/05/2019	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 20/05/2019	<b>Condition category</b> Cancer	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

Background and study aims.

Cancer is one of the leading causes of morbidity and mortality in our society, being responsible for nearly one-sixth of deaths and is expected to rise by about 70% over the next two decades. In the last years, many epidemiological studies related to the assessment of the relationship between nutrition and cancer have been done. However, studies which focus on the role of nutrition for the oncological patient are less frequent. It is commonly agreed that a poor nutritional status during cancer treatment weakens the patient, renders the administration of an appropriated treatment difficult, and increases treatment side-effects. There are several guidelines providing nutritional recommendations for cancer patients during the disease, mainly addressed to minimize treatment side effects. Despite the increasing demand for specific nutritional recommendations during the disease, tools for personalized nutritional indications and nutrition support are not yet used routinely as an adjunct to treatments.

In a previous study, we found that cancer patients had an altered lipid metabolism compared to a healthy population. The objective of this study is to evaluate if personalised nutritional advice based on the measure of the lipid metabolism of each the patient can provide an improvement for the nutritional and metabolic status of the patients during the chemotherapy treatment. The lipid profile will be measured by the lipid analysis of the red blood cell membranes. Patients in the diet group will receive personalised advice for diet and fatty acid supplements. At the end of the chemotherapy (6 months), the lipid profile will be measured again, together with the quality of life and other clinical parameters to assess the effect of the personalised diet.

Who can participate?

Cancer patients who initiate a chemotherapy treatment with a life expectancy of at least 1 year, age less than 70 years and a body mass index (BMI) less than 35.

What does the study involve?

Patient participation in this study involves:

To complete a questionnaire that collects information regarding eating habits, taste and smell alterations, food preferences and quality of life, through personal interviews taking advantage of visits to the Outpatient Unit of Onkologikoa hospital. This questionnaire will be completed three times throughout the chemotherapy treatment (time 0, 3 months and 6 months)

Blood extraction for lipid analysis and biochemical parameters (2 tubes of 3 mL) twice throughout the study (time 0 and 6 months)

To follow the nutritional recommendations defined according to your individual needs

What are the possible benefits and risks of participating?

We consider that this clinical trial has low risk, new experimental drugs are not being used. We will work with nutritional supplements of fatty acids, currently available on the market, of proven quality, previously used in clinical trials and in safe doses (not exceeding those recommended by the European Food Safety Agency (EFSA)).

In addition, the nutritional recommendations that will be provided, are based on the Mediterranean diet, a balanced diet and with a scientific basis for its benefit in the prevention of chronic diseases such as cardiovascular diseases and cancer.

Likewise, this study will contribute to generate knowledge and discover new nutritional strategies for cancer patients during chemotherapy treatment.

Where is the study run from?

Onkologikoa Foundation, Located in San Sebastian, Basque Country-Spain.

When is the study starting and how long is it expected to run for?

The trial started on 26/06/2017, and it is expected to end on 04/10/2019

Who is funding the study?

This work was funded by AZTI and Onkologikoa Foundation.

Who is the main contact?

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## Contact information

### Type(s)

Scientific

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## **Additional identifiers**

**Clinical Trials Information System (CTIS)**

Nil known

**ClinicalTrials.gov (NCT)**

Nil known

**Protocol serial number**

1

## **Study information**

**Scientific Title**

Personalized nutrition for cancer patients in chemotherapy treatment according to erythrocyte membrane lipid profile.

**Acronym**

CALIMA

**Study objectives**

This project is based on the hypothesis that mature erythrocytes are indicators of altered lipid metabolism in cancer patients and through a personalized nutritional plan (nutrition advice + supplementation) it is possible to recover the balance of the lipid profile at the cellular level of cancer patients.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Approved 04/12/2016, the Ethics Committee of Clinical Research of the Health Area of Gipuzkoa (Pº Doctor Beguiristains. 20014. San Sebastian-Spain; ceic.eeaa@euskadi.eus; +34 945 01 92 96; +34 945 01 56 34), ref: 1090/2015.

**Study design**

Single centre, prospective randomised controlled clinical trial

## **Primary study design**

Interventional

## **Study type(s)**

Quality of life

## **Health condition(s) or problem(s) studied**

Cancer

## **Interventions**

A prospective controlled clinical trial with intervention in the diet for six months in cancer patients from the Onkologikoa Foundation (single-centre) will be conducted. After diagnosis and prior to chemotherapy treatment, participants will be recruited and randomly assigned to two groups: diet and control. Patients will be randomized (following a table of random numbers generated by a computer) considering age, BMI and molecular characteristics of the tumor [expression of human epidermal growth factor 2 (HER2)] in a 1: 1 ratio to each of the two groups.

The lipid profile in the erythrocyte membrane will be analyzed for all participants. Data regarding dietary habits, quality of life and clinical data will be also collected. Patients in the diet group will receive personalized nutrition advice and fatty acid food supplements, based on their erythrocyte lipid profile for the next six months. Food supplements will come from Lipinutragen brand because of their already tested good quality. These supplements contain long chain fatty acids (EPA, DHA), gamma-linolenic acid and alfa-linolenic acid in doses recommended by EFSA. The diet will be based on Mediterranean diet guidelines and adjusted for different fat families. The control group will not receive any personalized advice, they will follow the general recommendations according to the Mediterranean diet.

At the end of the treatment, the lipid profile will be measured again. Both groups will be compared to evaluate the effectiveness of the nutritional treatment (personalized advice + supplementation) to recover the balance in the erythrocyte lipid profile in six months. Other biochemical parameters related to lipid metabolism and inflammation, as well as the quality of life of patients, will be also evaluated.

## **Intervention Type**

Supplement

## **Primary outcome(s)**

The lipid profile of the erythrocyte membrane is measured using GC-MS (Gas Chromatography Mass Spectrometry) in blood samples (1 ml) at baseline and the end of chemotherapy.

## **Key secondary outcome(s)**

1. Quality of life is measured using validated EORTC questionnaires (QLQ-C30) and a specific module for different types of cancer (QLQ-BR23, QLQ-CR29, QLQ-OV28 and QLQ-PR25) at an intermediate point of the intervention treatment and at the end of the chemotherapy treatment.
2. Sensory alterations in taste, smell and appetite, and food preferences are measured using a questionnaire (defined in Amézaga J., et al., 2018) at baseline, at an intermediate point of the intervention treatment and at end of the chemotherapy treatment.
3. Nutritional habits are measured using a food frequency questionnaire (validated for the

Spanish population in the PREDIMED study - Fernandez-Ballart, J.D., et al., 2010) at baseline and at the end of the chemotherapy treatment.

**Completion date**

30/11/2019

## **Eligibility**

**Key inclusion criteria**

1. Patients of any type of Cancer who initiate a chemotherapy treatment, and who understand their participation in the trial.
2. Neoadjuvant, adjuvant and metastatic treatments will be considered.
3. A life expectancy of at least 1 year.
4. Age less than 70 years.
5. A body mass index (BMI) less than 35.

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Key exclusion criteria**

1. Diabetic or with other risk factors related to lipid metabolism such as metabolic syndrome.
2. Allergy to fish.
3. Severe malnutrition, cachexia or anorexia.

**Date of first enrolment**

28/06/2017

**Date of final enrolment**

30/09/2019

## **Locations**

**Countries of recruitment**

Spain

**Study participating centre**

Onkologikoa Foundation.

P. Dr Beguiristain 121.

San Sebastian

Spain  
20014

## Sponsor information

**Organisation**  
AZTI

**Organisation**  
Onkologikoa Foundation

**Organisation**  
Tecnalia

**ROR**  
<https://ror.org/02fv8hj62>

## Funder(s)

**Funder type**  
Research organisation

**Funder Name**  
AZTI

**Funder Name**  
Onkologikoa Foundation

## Results and Publications

### Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date.

### IPD sharing plan summary

Not expected to be made available

**Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes
<a href="#">Study website</a>	Study website	11/11/2025	11/11/2025	No	Yes