

Long-term bovine colostrum supplementation in football players

Submission date 18/10/2023	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 07/11/2023	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
Last Edited 21/01/2025	Condition category Other	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

Physical exercise, especially of high intensity, is a significant burden to the athlete's body. It should be emphasized that achieving high results in competitive sports requires the use of significant, sometimes extreme, exercise loads during training, which may result in homeostasis disorders, adversely affecting the fitness of athletes. The supplementation of bovine colostrum (BC) has a documented immunomodulatory effect on the players' diet and may be one of the elements of a safe and gentle intervention that restores homeostasis e.g., the balance of the immune system. There is also increasing evidence that BC may be a valuable supplement for athletes to aid exercise performance and recovery

Thus the study aims to investigate the effects of 6 months of bovine colostrum supplementation on indicators of immune system functioning, selected parameters related to iron management, pro-anti inflammatory and anabolic/catabolic balance in young football players.

Who can participate?

The research participants were men, football players who met the following criteria: the inclusion criteria included: 1) competitive football training for at least 3 years; 2) male; 3) not taking any medications throughout the study and 4) providing voluntary consent for participation in the study. The exclusion criteria included: 1) any health problems.

What does the study involve?

The study is a randomized clinical trial designed to compare the effects of 6 months of bovine colostrum supplementation on the functioning of the immune system of soccer players. A standardized stress test will be performed at the beginning of the trial and after 3 and 6 months of supplementation. Blood samples were taken before and after the stress test and after 3 hours of rest. Blood will be taken from each athlete from the ulnar vein in the amount of 2x4ml (clot test tube and EDTAK2 tube): on an empty stomach, immediately after exercise and 3 hours after exercise. The level of: IGF-1, testosterone, cortisol, IL-10, IL-6, TNF- α , IgG, lactoferrin, iron, hepcidin, TIBC, UIBC will be determined. A significant increase in IgG levels was seen, accompanied by a decrease in inflammatory markers (TNF- α).

What are the possible benefits and risks of participating?

The main benefits of taking the supplement are shortening the time and improving post-

exercise regeneration processes in athletes, improving the functioning of the immune system, strengthening immunity, and regulating hormonal balance, which in intensively training athletes are disturbed by physical exercise. Previously conducted studies indicate that the dose administered in our studies is safe for humans and does not cause side effects.

Where is the study run from?

Department of Human Physiology, Nicolaus Copernicus University Ludwik Rydygier Collegium Medicum in Bydgoszcz (Poland)

Department of Biological Sciences, Faculty of Physical Culture in Gorzow Wielkopolski, Poznan University of Physical Education (Poland)

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

February 2017 to November 2018

Who is funding the study?

Regional Operational Program—Lubuskie 2020 (Poland)

Who is the main contact?

Dr Joanna Ostapiuk-Karolczuk, j.ostapiuk@awf-gorzow.edu.pl

Contact information

Type(s)

Public, Scientific, Principal investigator

Contact name

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Additional identifiers

Study information

Scientific Title

The influence of the supply of polyphenol compounds on the parameters of the pro-oxidant and pro-oxidant balance and inflammation indicators in physically active people

Acronym

LTBCSFP

Study objectives

H1. Bovine colostrum supplementation will improve iron metabolism in training soccer players in response to intense physical exercise.

H2. Bovine colostrum supplementation will improve the functioning of the immune system in training soccer players in response to intense physical exercise.

H3. Bovine colostrum supplementation will have a positive effect on the pro-anti-inflammatory balance in training football players in response to intense physical exercise.

H4. Bovine colostrum supplementation will influence the hormonal balance in training football players in response to intense physical exercise.

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 13/06/2017, Bioethics Committee of the Nicolaus Copernicus University in Toruń at the Collegium Medicum Ludwik Rydygier (M.Skłodowskiej-Curie 9, Bydgoszcz, 85-094, Poland; +48 52 585 25 63; komisja.bioetyczna@cm.umk.pl), ref: KB 382/2017

Study design

Interventional randomized control trial

Primary study design

Interventional

Study type(s)

Prevention

Health condition(s) or problem(s) studied

Prevention of iron, inflammatory, and hormonal disturbances in trained athletes after intense exercise.

Interventions

Before the supplementation, the players were randomly divided into two groups. The supplemented group (n=19) received four gastro-resistant capsules of BC (produced by AGRAPAK, Poland) every morning and evening. One gel capsule contained 0.4 g of colostrum. The composition of the supplement per day dose of 3.2 g of colostrum (four capsules in the morning and four in the evening): total protein - 2.620 g, lactose - 0.16 g, fat - 0.05 g, active protein substances (lactoferrin - 30 mg, PRP (platelet-rich plasma) - 0.16 g, IgG - 1050 mg, IGF - 16 µg, LZM - 21.2 mg, and αLA - 30 mg). The PRP content was estimated by measuring the content and ratio of amino acids (Pro and Val) based on the conducted research and analysis of bibliographic data. The placebo group (n=9) received powdered milk in the same dose, form, and date as the competitors. The composition of the placebo was calculated for a single dose of 3.2 g: lactose 1.6 g, protein 1.08 g, fat 0.04 g, and ash 0.25. The supplementation period lasted for 24 weeks in total.

The supplement study was performed using two types of preparations: a supplement and a placebo. Identical-looking capsules were prepared for both preparations. The contents (supplement and placebo) were very similar to each other (white powder) with virtually identical taste and smell consistency. Both preparations were packed in identical packages, marked with numbers that corresponded to the numbers assigned to the athletes during randomization. Only the study leader knew the details of the coding and he supervised the distribution of

preparations for athletes. Neither the participants nor the people conducting the experiment had access to key information that could influence its course. This information is available only to the main coordinator of the experiment - the study leader, who does not participate in the experiment himself, but analyzes its results after other people have completed collecting all the data.

Intervention Type

Supplement

Primary outcome(s)

Immune system activity and inflammatory response were measured using IgG level, IL-6, TNF- α , IL-10, at baseline, immediately after exercise, and 3h at each performed exercise test.

Key secondary outcome(s)

1. Speed of exercise measured during the Beep Test at baseline (before supplementation) and after 3 and 6 months of supplementation
2. Number of sections run in the Beep Test at baseline (before supplementation) and after 3 and 6 months of supplementation

Completion date

15/11/2018

Eligibility

Key inclusion criteria

1. Competitive football training for at least 3 years
2. Male
3. Not taking any medications throughout the study
4. Provide voluntary consent for participation in the study

Participant type(s)

Healthy volunteer

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 days

Upper age limit

30 days

Sex

Male

Total final enrolment

28

Key exclusion criteria

Any health problems.

Date of first enrolment

07/05/2018

Date of final enrolment

10/05/2018

Locations**Countries of recruitment**

Poland

Study participating centre

Department of Human Physiology, Nicolaus Copernicus University Ludwik Rydygier Collegium Medicum

Karłowicza 24

Bydgoszcz

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Study participating centre

Department of Physical Education; Kazimierz Wielki University

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Sponsor information**Organisation**

Regional Operational Program—Lubuskie 2020

Funder(s)

Funder type

Government

Funder Name

Regional Operational Program—Lubuskie 2020

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be available upon request from (please provide contact name and email address) for 12 months from the publication date of the article. Mirosława Cieślicka e-mail: m.cieslicka@cm.umk.pl

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		14/11/2023	21/01/2025	Yes	No
Participant information sheet			19/10/2023	No	Yes