Pilot Study: are human intestinal biopsies usefull as in vitro model for the small intestine

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Human intestinal biopsies will be used to further develop an in vitro intestinal model. This model will the be used for future research to study the effect of nutreints and drugs on intestinal function. The human biopsies will be compared with...

Ethical review	Not approved
Status	Will not start
Health condition type	Appetite and general nutritional disorders
Study type	Observational invasive

Summary

ID

NL-OMON33960

Source
ToetsingOnline

Brief title
Pilot Study: human intestinal biopsies as in vitro model

Condition

- Appetite and general nutritional disorders

Synonym
obesity

Research involving
Human

Sponsors and support

Primary sponsor: TNO
Source(s) of monetary or material Support: TNO

Intervention

Keyword: biopsy, human, in vitro model, intestine

Outcome measures

Primary outcome

Comparison of human intestinal biopsies with pig small intestinal model with

regard to satiety hormones active in food recognotion and signalling.

Secondary outcome

not applicable

Study description

Background summary

Obesity is a growing problem throughout the world. The most commonly used measure of obesity is the Body Mass Index (BMI): body weight in kilograms divided by height in metres square. A person with a BMI of more than 25.0 kg/m2 is considered too heavy (overweight), a BMI of more than 30.0 kg/m2 is considered overweight (obesity). Several epidemiological studies have shown that obesity increases complications, such as diabetes, high blood pressure, elevated cholesterol and cardiovascular disease.

Obesity is regulated by eating patterns, related to hunger or appetite and saturation (the feeling of enough). The regulation of appetite and satiety in general is very complex and includes several signalling systems, organs and processes. Hormones in the gastrointestinal tract are part of these regulation processes by reducing or increasing food intake. Important research focuses on the phase of recognition of food in the gastrointestinal tract. Many researchers involved stress the importance of using a good intestinal model to study this phase. A good intestinal model will enable futher research to study the integrity and functionality of the gut epithelium, and to sreen for nutrients and potential drug candidates for obesity. Also the impact of satiety hormones on the intestinal function can then be studied. however this pig model needs first to be validated in comparison with the human intestine.

Study objective

Human intestinal biopsies will be used to further develop an in vitro

intestinal model. This model will the be used for future research to study the effect of nutreints and drugs on intestinal function. The human biopsies will be compared with intestinal segments of a pig.

Study design

For this study, biopsies will be taken from the small intestine from patients already scheduled to undergo an endoscopy. These biopsies will be used for various in vitro experiments. The biopsies will be cultured for up to 24 hours for the measurements of various satiety hormones.

To measure the satiety hormones biopsies will be exposed to a concentration gradient of casein hydrosolate. Casein hydrosolate is a positive control for the release of satiety hormones. This will be performed in 24-wells plates and ussing chambers.

24-well plates
After 1-hour incubation with casein medium will be collected and stored until measurement of the released satiety hormones. Two important satiety hormones will be measured via a radio immuno assay (RIA); CCK and GLP-1.

Ussing chambers
To determine if there is active or passive transport of the satiety hormones biopsies will be placed in an ussing chamber. Hereby the apical and basolateral side will be determined. The biopsy will be exposed on the apical side. Subsequently the transport from the apical side to the basolateral side can be determined due to the separation of the compartments. In the medium the concentration of CCK and GLP-1 will be determined via RIA assay. As comparison the reference compounds mannitol and caffeine as markers for paracellular and transcellular transport in gut epithelium will be determined as well.

These studies will run in parallel with experiment performed in gut segments of the pig. These results will be compared with each other in order to validate the model in pig. Subsequently future experiments with other drugs and nourishment components will be performed in the pig model.

Study burden and risks

The endoscopy that patients will undergo is already scheduled, unrelated to this study. To take an extra 6 biopsies is considered a minimal burden for the participating patients.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Patients older than 18 years of age, capable of giving informed consent, who are scheduled to undergo a diagnostic gastroscopy or colonoscopy.

Exclusion criteria

Inflammatory bowel disease, celiac disease, malignancy, bleeding disorders or liver cirrhosis.

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Will not start
Enrollment:	10
Type:	Anticipated

Ethics review

Not approved

Date:	03-03-2009
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL25204.041.08