

Genetically-lactose intolerance

Period:	August 2012 - July 2015
Budget:	1.623.000 DKK
Funding:	The Danish Dairy Research Foundation
Project manager:	Helle Kirstine Mørup Bergholdt
Institution:	Næstved Hospital, Department of Clinical Biochemistry
Collaborators:	Christina Ellervik, Næstved Hospital, Department of Clinical Biochemistry Børge G Nordestgaard, Herlev Hospital, Department of Clinical Biochemistry

Aim and Description:

Background: Being genetic lactose intolerant means that you have inherited a combination of genes, which makes your body unable to digest lactose (milk sugar) in adulthood. People, who are lactose intolerant, often experience diarrhoea, stomach pain, gas, and bloating when consuming milk and therefore often restrict/avoid the intake of milk.

State of the art: A statistic literature review (meta-analysis) has indicated that a high intake of milk reduces the risk of diabetes, cancer, cardiovascular disease, and death. Approximately 10 years ago the genetic variants for lactose intolerance and lactose tolerance among Europeans were discovered (genotype CC vs. TC or TT). At present, only a few, small studies have investigated the effect of *both* genetic heritage and milk intake on the risk of disease.

Objective: Our study examines the effect of *both* genetic heritage and milk intake on the risk of diabetes, cancer, cardiovascular disease, and death, respectively (referred to as comorbidity). Our hypothesis is that genetically inherited lactose intolerance and restricted/no intake of milk increase the risk of comorbidity).

Material and method: 3 Danish population studies with almost 70,000 individuals. Data include information from questionnaires, health exams, and genetic tests.

The approach will be to investigate the following:

1. Association between milk intake and the respective comorbidities
2. Association between genetic variants (genotype CC, TC and TT) and milk intake
3. Association between genetic variants (genotype CC, TC and TT) and the respective comorbidities
4. The combined effect of genetics and milk intake on the risk of the respective comorbidities

Milk intake includes yes/no to milk, amount of milk, and type of milk.

Expected results: This study is sufficiently powered to determine whether genetic lactose intolerance and restricted/no milk intake increases the risk of the respective comorbidities. If the hypothesis is confirmed, the results may influence recommendations on milk intake.