AARHUS UNIVERSITY

Media release

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Basic information

Name: Martin Brandhøj Skov Email: msch@biome.dua.dk Phone: 21965266

Department of: Biomedicine

Main supervisor: Thomas Holm Pedersen

Title of dissertation: Anti-myotonic effects of extracellular divalent cations and clinically used anti-epileptica

Date for defence: 23rd of Feburary at (time of day): 14:00 Place: Fysiologisk Auditorium, bygning 1163, Ole Worms Allé 4

Media release (Danish)

Divalente kationer of anti-epileptica hæmmer myotoni

Et nyt ph.d.-projekt fra Aarhus Universitet, Health Har vist at forhøjede niveauer af magnesium og calcium i de væsker der omgiver muskelvæv kan dæmpe en bestemt type genetisk betingede muskelkramper, klinisk kendt som myotoni. Forskningsprojektet har arbejdet på flere niveauer og afdækket at fænomenet hvor en øget koncentration af de to ioner calcium og magnesium dæmper graden af myotoni, eksisterer på isolerede muskler fra både rotter og mennesker. Ydermere har projektet vist i en enkelt patient, der lider af myotoni, at forøgelse af koncentrationerne af magnesium og calcium fører til en stærk reduktion af symptomerne. Via matematiske modelleringer af enkelte muskel fibre, blev en mulig mekanisme for fænomenet foreslået, denne er ikke endeligt bekræftet. For at afprøve om den foreslåede mekanisme kunne være en mulig forklaring på fænomenet, blev en række kendte anti-epileptika anvendt på eksperimentelt induceret myotoni i isolerede rotte-muskler. De afprøvede anti-epileptika viste sig at være gode hæmmerne af myotoni, uden ellers at påvirke musklerne negativt. Disse resultater blev gentaget og vist i isolerede muskler fra mennesker. Resultaterne fra forskningsprojektet har resulteret i oprettelsen af et patent, rettet mod ny behandling af myotoni.
Projektet er gennemført af Martin Brandhøj Skov, der forsvarer det d. 23/02

Forsvaret af ph.d.-projektet er offentligt og finder sted den 23/02 kl. 14:00 i Fysiologisk auditorium, Aarhus Universitet, Ole Worms Allé 4, Aarhus C. Titlen på projektet er ”Anti-myotone effekter af ekstracellulare divalente kationer og klinisk anvendt anit-epileptika”. Yderligere oplysninger: Ph.d.-studerende Martin Brandhøj Skov, e-mail: msch@biome.au.dk, tlf. 21965266.

Media release (English)

Divalent cations and anti-epileptica reduce myotonia

A recent research project from Aarhus University, Health, has shown that increased levels of magnesium and calcium ions in the extracellular fluids surrounding skeletal muscle may dampen genetically induced muscle contractions, clinically known as myotonia. The research project has uncovered the phenomenon where an increased concentration of magnesium and calcium ions dampen myotonia in isolated muscle from both rat and human subjects. Furthermore, the project has shown that increased levels of magnesium and calcium could greatly reduce myotonic symptoms, in a single patient suffering from myotonia. By employing mathematical modelling of single muscle fibres, a possible mechanism for the observed phenomenon was proposed, however this mechanism has not been finally confirmed. To investigate if the proposed mechanism may provide a reasonable explanation for the observed phenomenon, a series of known anti-epileptic drugs were tested to assess their dampening effect on experimentally induced myotonia in isolated rat muscle. The tested anti-epileptic drugs all displayed excellent ability to reduce myotonia, and the results were replicated in

isolated muscle from human subjects. The results from the research project have led to filing of a patent aimed at novel treatment for myotonia.
The project was carried out by Martin Brandhøj Skov, who is defending her dissertation on 23rd of Feburary.

The defence is public and takes place on 23rd of Febuaray at Fysiologisk Auditorium in building 1162 , Aarhus University, Ole Worms Allé 4, Aarhus N. The title of the project is "Anti-myotonic effects of extracellular divalent cations and clinically used anti-epileptica". For more information, please contact PhD student Martin Brandhøj Skov, email: msch@biomed.au.dk, Phone +4521965266.

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