Press release

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Basic information

Name: Haiyun Qi Email: qi@clin.au.dk Phone: 91870021

Department of: Clinical Medicine

Main supervisor: Christoffer Laustsen

Title of dissertation: Monitoring renal metabolism and function in healthy and diabetic kidneys during acute interventions using hyperpolarized 13C MRI

Date for defence: 02-10-2020 at (time of day): 1300 Place: Auditorium C114-101, indgang C, C110, Aarhus Universityhospital, Palle Juul-Jensens Boulevard 35, 8200 Aarhus N.

Press release (Danish)

Monitoring renal metabolism and function in healthy and diabetic kidneys during acute interventions using hyperpolarized 13C MRI

Hyperpolariseret (HP) carbon-13 (13C) magnetisk resonans billeddannelse (MRI) er et nyt non-invasivt billeddannelsesværktøj, der anvender 13C-mærket sporstofer til at undersøge hemodynamiske og metaboliske forandringer i forbindelse med sygdom og behandling deraf.

I denne afhandling undersøgte jeg metodens evne til at beskrive akutte nyre metaboliske og funktionelle ændringer. Helt præcist undersøgte jeg sporestofferne [1-13C]pyruvat og [15N, 13C]urea til at beskrive de akutte nyre specifikke effekter af metformin, bedøvelse og glucagon i raske og diabetiske rotter.

Resultaterne fra dette ph.d.-studie understøtter introduktionen af HP 13C MRI til at bestemme de præcise effekter af akutte interventioner så som behandlings effekter langt tidligere end i dag. Projektet er gennemført af Haiyun Qi, der forsvarer sin afhandling den 2. oktober 2020

Forsvaret af ph.d.-projektet er offentligt og finder sted den 2 oktober kl. 13 i Auditorium C114-101, indgang C, C110, Aarhus Universityhospital, Palle Juul-Jensens Boulevard 35, 8200 Aarhus N.
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Bedømmelsesudvalg:
Formand og moderator - Jens Christian Djurhuus, Professor emeritus, cand.med., dr.med.
Department of Clinical Medicine, Aarhus University, Denmark

Opponent - Iosif Alexandru Mendichovszky, Clinical Consultant, MD, PhD
Department of Nuclear Medicine, Box 170, Cambridge University Biomedical Campus, Hills Road, Cambridge, UK

Opponent - Mathilde Hauge Lerche, Senior Researcher, MSc, PhD
Department of Health Technology, Technical University of Denmark, Denmark

Press release (English)

Monitoring renal metabolism and function in healthy and diabetic kidneys during acute interventions using hyperpolarized 13C MRI

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I denne afhandling undersøgte jeg metodens evne til at beskrive akutte nyre-metaboliske og funktionelle ændringer. Helt præcist brugte jeg de 2 sporstoffer [1-13C]pyruvat og [15N, 13C]urea til at beskrive de akutte nyrespecifikke effekter ved brug af metformin, bedøvelse og glucagon i raske og diabetiske rotter.

Resultaterne fra dette ph.d.-studie understøtter introduktionen af HP 13C MRI til at kunne bestemme de præcise effekter af akutte interventioner som eksempelvis behandlingseffekter langt tidligere end man kan i dag.
Projektet er gennemført af Haiyun Qi, der forsvarer sin afhandling den 2. oktober 2020

Hyperpolarized (HP) carbon-13 (13C) magnetic resonance imaging (MRI) is a novel non-invasive imaging tool using 13C-labelled tracer to investigate the hemodynamic and metabolic changes in connection with disease and treatments.

In this dissertation, I investigated the ability of this method to describe acute renal metabolic and functional changes. Exactly, I examined the tracers [1-13C]pyruvate and [15N,13C]urea to describe the acute kidney specific effects of metformin, diabetes, anaesthesia and glucagon.

The results of this PhD project support the introduction of HP 13C MRI to determine the exact effects of acute interventions such as treatment effects much earlier than we can today.

The defence is public and takes place on 2nd of October, 2020, at 1 pm in Auditorium C114-101, entrance C, C110, Aarhus Universityhospital, Palle Juul-Jensens Boulevard 35, 8200 Aarhus N. The title of the project is Monitoring renal metabolism and function in healthy and diabetic kidneys during acute interventions using hyperpolarized 13C MRI. For more information, please contact PhD student Haiyun Qi, email: qi@clin.au.dk, Phone +45 91870021.

Assessment committee:
Chairman and moderator - Jens Christian Djurhuus, Professor emeritus, cand.med., dr.med.
Department of Clinical Medicine, Aarhus University, Denmark

Opponent - Iosif Alexandru Mendichovszky, Clinical Consultant, MD, PhD
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Department of Health Technology, Technical University of Denmark, Denmark

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