Steroid Hormones and Receptors
STEROID BIOLOGY AND ACTION

A Proteomic Approach to Identify Circulating Glucocorticoid Responsive Proteins in Humans

Warrick John Inder, MBChB, MD[1], Sahar Keshvari, PhD[2], Johanna L. Barclay, PhD[2], Jayde E. Ruelcke, BBiomedSc (Hon)[3], Thomas Stoll, PhD[4], Ahmed Mohamed, PhD[4], Brendan J. Nolan, MBBS[1], Nicole Cesana-Nigro, MD[1], Michelle M. Hill, PhD[4].
[1]Princess Alexandra Hospital, Brisbane, Australia, [2]Mater Research Institute, Brisbane, Australia, [3]UQ Diamantina Institute, Brisbane, Australia, [4]QIMR Berghofer Medical Research Institute, Brisbane, Australia.

SAT-LB136

Glucocorticoids used in pharmacological doses for the treatment of a variety of medical conditions, and endogenous glucocorticoid excess - Cushing's syndrome, may result in several adverse effects, but currently there is no clinically useful biomarker of glucocorticoid activity. We have applied a proteomic approach to the discovery of glucocorticoid-responsive proteins potentially measurable in human serum samples. To minimise the masking by abundant serum proteins, we conducted discovery proteomics on the secretome of ex vivo-stimulated peripheral blood mononuclear cells (PBMC) isolated from 12 volunteers. The PBMC were divided into 4 treatment groups; +/- dexamethasone 100 ng/mL (dex) for 4h, or +/- dex for 24h. In all treatment groups, media was changed to serum free for 3h before collection. Media samples were processed for proteomics, with 561 and 273 proteins analysed by label-free quantification (LFQ) for the 4h and 24h secretome, respectively. Paired statistical analysis at the 2 time points generated a shortlist of 43 candidate biomarker proteins, which was verified using a multiple reaction monitoring (MRM) assay, confirming the differential secretion of 12 proteins at both 4h and 24 h. Five proteins were selected for validation using enzyme linked immunosorbent assay (ELISA) in an independent cohort: β2 microglobulin (B2M), lysozyme C (LYZ), high-mobility group protein 2 (HMG2), nucleophosmin (NPM1) and nucleolin (NCL). Twenty new volunteers (10M and 10F) had venous blood drawn at baseline and 12h after 4 mg oral dex. Four proteins were detectable by ELISA, three of which showed statistically significant change in concentration. Serum LYZ and NPM1 significantly decreased following dex: LYZ - 101 ± 5.5 vs 67 ± 4.4 ng/mL, (P<0.0001); NPM1 - 17.4 ± 1.0 vs 14.3 ± 0.9 ng/mL, (P<0.01), while HMG2 significantly increased - 819 ± 34 vs 984 ± 60 pg/mL (P<0.01). These results demonstrate that an *ex vivo* proteomic approach using PBMC in conditioned media can identify glucocorticoid-responsive proteins measurable in human serum.

Diabetes Mellitus and Glucose Metabolism
DIABETES DIAGNOSIS, TREATMENT AND COMPLICATIONS

The Nutrition Education Using a Health Care Application With Artificial Intelligence in Patients With Diabetes Mellitus

Takuya Higashitani, MD[1], Mitsuhiro Kometani, MD, PhD[2], Rie Oka, MD, PhD[1], Yuko Gondo, MD[1], Akihiro Nomura, MD, PhD[3], Ayaka Yasugi, MPP[4], Daisuke Aono, MD[5], Shigehiro Karashima, MD, PhD[1], Takashi Yoneda, MD, PhD[6].
[1]Kanazawa University, Kanazawa, Japan, [2]Kanazawa University, Toyama, Japan, [3]KANAZAWA UNIVERSITY, Kanazawa, Japan, [4]asken Inc, Tokyo, Japan, [5]Kanazawa University, Kanazawa Ishikawa, Japan, [6]Kanazawa University, Ishikawa, Japan.

SUN-LB110

Background: Diet control is the basis of the treatment of type 2 diabetes. However, the education and practice of diet control for the patients with type 2 diabetes mellitus (T2DM) need a lot of manpower and time. In 2009, we have developed a telemedicine model that nutritionists analyze photos of T2DM patients' meal and supervise them remotely. Our system resulted in the improvement of glycemic control of T2DM patients. Recently, the image analysis technology using the artificial intelligence (AI) progresses rapidly. The smart device application "Asken" has an AI-powered photo analysis system which analyzes the photo of the entire meal and identifies the frame of each item as well as its menu and serving amount. In addition, this application delivers individualized dietary messages and feedbacks. Case reports: We report two T2DM cases who conducted nutrient intervention by this application. One case was a 72-year-old man whose HbA1c decreased from 7.2% to 6.6% and weighed from 58.7kg to 57.5kg in 4 months. However, his total cholesterol increased from 119mg/dl to 200mg/dl, and low-density lipoprotein cholesterol (LDL) also increased from 47mg/dl to 106mg/dl. Another case is a 60-year-old man whose HbA1c improved from 7.0% to 6.6% and his weight decreased from 78.0kg to 76.0kg in 3 months. Total cholesterol was 140mg/dl to 128mg/dl, and LDL-cholesterol was from 65mg/dl to 54mg/dl. Conclusion: Using this application might be useful for diet control of T2DM patients. The effects of AI-supported nutrient intervention using application like this should be further clarified in the large number of patients.

Healthcare Delivery and Education
EXPANDING CLINICAL CONSIDERATIONS FOR PATIENT TESTING AND CARE

The Construction of the Online Health Guidance Service for Life-Style Related Diseases (Kanazawa Slim Study)

Mitsuhiro Kometani, MD[1], Rie Oka, MD, PhD[2], Ayaka Yasugi, MPP[3], Yuko Gondo, MD[2], Akihiro Nomura, MD, PhD[4], Daisuke Aono, MD[5], Takuya Higashitani, MD[6], Shigehiro Karashima, MD, PhD[2], Mikiya Usukura, MD, PhD[7], Kenji D. Furukawa, MD, PhD[8], Takashi Yoneda, MD, PhD[6].
[1]Kanazawa University, Toyama, Japan, [2]Kanazawa University, Kanazawa, Japan, [3]asken Inc., Tokyo, Japan, [4]KANAZAWA UNIVERSITY, Kanazawa, Japan, [5]Kanazawa University, Kanazawa Ishikawa, Japan, [6]Kanazawa University, Ishikawa, Japan, [7]Houju Memorial Hospital, Nomi, Japan, [8]Japan Advanced Institute of Science and Technology, Nomi, Japan.

MON-LB304

Background: Metabolic syndrome is a cluster of metabolic disorders including elevated blood pressure, high plasma glucose, excess body fat around the waist, and abnormal cholesterol or triglyceride levels. These conditions cause serious complications such as heart disease, stroke and type 2 diabetes. In Japan, specific health checkups and specific health guidance which focused on metabolic syndrome has