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Identification and functional analysis of inhibin βE (*INHBE*) as a hepatokine

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[Background] Hepatokines secreted from the liver regulate systemic metabolism. Previously, we have identified selenoprotein P and LECT2 as hepatokines. To identify novel hepatokine associated with insulin resistance, we performed a comprehensive analysis of gene expression profiles using a DNA chip method in liver biopsy samples from humans with varying degrees of insulin resistance. In addition, gene expressions in independent liver samples were analyzed using quantitative real time-PCR method.
[Results] Inhibin βE (*INHBE*) was emerged as a novel hepatokine from the analysis of two independent cohort. The hepatic gene expression was positively correlated with HOMA-IR and body mass index in humans. *Inhbe* gene expression in liver and protein levels in serum of db/db mice were higher than those of C57BL/6J. To screen the function of *Inhbe* in whole-body energy metabolic status, hepatic mRNA was knocked down with siRNA for *Inhbe* (siINHBE) in db/db mice. Treatment with siINHBE results in decrease of body fat percentage and respiratory quotient as well as increase of plasma total ketone bodies compared with treatment with non-targeting siRNA. These results suggest that inhibin βE accelerates fat oxidation.
[Conclusion] Obesity cause overproduction of inhibin βE, which would suppresses fat oxidation. This could be one of factors for hard to lose weight in obese people. (COI: Properly Declared)

1P-149

Serum leptin adiponectin and their effects on obesity among adolescents in Colombo district Sri Lanka

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Background
Leptin and adiponectin are adipokines with opposing effects in the body including insulin sensitivity. This study aimed to assess serum leptin and adiponectin levels in obese(OB)and normalweight(NW)children and to describe its relationship with body fat percentage(BF%) and insulin resistance
Methodology
Obese and overweight children(n=121)and healthy normal weight children(n= 263)aged 10 to 16 years were recruited after informed written consent. Definitions of overweight and obesity were based on WHOZ scores ofBMIfor age. Serum leptin and adiponectin were measured by enzyme linked immunosorbent assay
BF%was obtained from Bioelectrical Impedance Analysis(BIA) Homeostasis model(HOMAIR)was applied to estimate IR.
Results
The mean(SD)age of the sample was 13.1(1.9) years and mean BMIZ score in OB and NW children were 1.5(0.8) and -0.2(0.5) respectively. Mean BF%in OB and NW children were 26.4(4.6) and 20.1(4.5). In OB, serum leptin(25.0 ± 12.3ng/mL), and HOMA–IR(3.4 ± 0.7) were significantly higher whereas adiponectin (9.0 ±6.1) was significantly lower . Serum leptin positively correlated with BF%(r=0.725),BMIZ(r=0.667) and HOMA IR (r= 0.582) while serum adiponectin correlated negatively(r= -0.578, -0.720 and -0.752) respectively
Conclusion
Serum leptin was higher and adiponectin was lower in OB children. The association of Leptin and adiponectin with BMI, BF% and IF was opposite
There is no actual or potential conflict of interest in relation to this presentation (COI: Properly Declared)

1P-151

Targeting FGF/FGFR axis ameliorates endometriosis progression

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Fibroblast growth factor (FGF)/FGF receptor (FGFR) system regulate a broad spectrum of signaling in embryonic development, implantation, and malignant transformation. However, surprise little information of aim-at-targeting FGF/FGFR system exploration to alleviate endometriosis, thus, we aimed to delineate their roles and contribution to endometriosis progression. Our results showed that, via bioinformatics screening of public available clinical database of endometriosis, we identified an unique feature of amplified FGF1/2/9/18 concordantly with their high affinity receptors FGFR1/2/3 in endometriosis. Employing selective small molecule of FGFR TKIs BGJ398 and AZD4547, effectively against FGFR1/2/3, reduced FGF9-augmentated endometriotic stromal cells proliferation by MTT assay. FGF9 enhanced endothelial cell migration and proliferation. FGF9-induced tube formation of in vitro cultured HUVEC. We then also determined that FGF9 significantly induced invasion of newly blood vessel by directed in vivo angiogenesis assay. Against FGFR2/3 signaling by FGFR TKIs significantly block FGF9-augmentated in vitro and in vivo vascular remodeling. Furthermore, we also established in vivo surgery-induced endometriosis of C57BL/6NCrj mice model. Mice received BGJ398 and AZD4547 magnificently abolishing FGF9-enhanced endometriotic lesion multiplicities of recipient mice. Our data provided novel evidence to support that therapeutic potential of against amplified FGF/FGFR axis in endometriosis. (COI: No)

1P-152

Subepithelial synchronous interstitial cells drive spontaneous contractions in the seminal vesicle

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In most visceral hollow organs, known pacemaker cells that drive spontaneous contractions are distributed in the muscular layer. However, we recently demonstrated that the mucosa of guinea pig seminal vesicles (SVs), a pair of male accessory glands, is required for generating periodical electrical and Ca^{2+} activity in the SV smooth muscle to develop spontaneous contractions. Here we further explored spontaneously active mucosal cells that drive the autorhythmicity in SV smooth muscle using intracellular recording techniques and fluorescent Ca^{2+} imaging. Their morphological properties were examined by focused ion beam/ scanning electron microscopy (FIB/SEM) tomography and fluorescent immunohistochemistry. In the basal surface of the SV mucosal preparations dissected free from the smooth muscle layer, two populations of cells developed spontaneous activity: 1) epithelial basal cells that irregularly generated spontaneous transient depolarizations and asynchronous Ca^{2+} transients and 2) subepithelial synchronous interstitial (SSI) cells that periodically generated electrical slow waves and synchronous Ca^{2+} transients. In SV smooth muscle preparations whose epithelium were partially removed, the synchronous Ca^{2+} transients occurred in the SSI cells preceded the synchronous Ca^{2+} flashes and associated contractions in the attached smooth muscle cells. Thus, it is likely that SSI cells directly drive the spontaneous activity in SV smooth muscle by sending electrical signal. (COI: No)

1P-153

Chronological change in concepts and symptoms of premenstrual syndrome of female university students

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Introduction. Premenstrual syndrome (PMS) is defined as physical and emotional symptoms that occur before women's menstruation period and often vary between women and resolve around the start of menstruation. Its etiology is still under investigation, and therapy and measures have not been established. We performed an identical questionnaire survey on PMS for Japanese female university students in both 2008 and 2016, and compared the results. Methods. We conducted an anonymous questionnaire survey involving 131 respondents. We asked about their profile, daily life, and PMS symptoms. We also asked about PMS recognition and knowledge on PMS. Furthermore we asked about 16 physical, mental, and behavioral symptoms. Results. After having added a definition of PMS at the beginning of the questionnaire, the recognition of PMS was 58% of the respondents (recognition rate). Forty-eight percent of the respondents answered that they suffered from PMS (disease rate). Comparison of the results in 2008 and 2016 revealed that the recognition rate significantly increased in 2016 compared with that in 2008 ($p<0.05$). The rate of PMS symptoms also increased in 2016 compared with 2008 without significant changes in rates of each PMS symptom. Respondents that obtained information on PMS from smart phones and social networking service (SNS) increased in 2016. Conclusions. Recognition and rates of PMS increased more in 2016 compared with 2008. The spread of SNS may increase PMS.
(COI: No)

1P-154

Expression and function of GLUT1-4 in mouse endometrium during the preimplantation period

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In this study, we have investigated the expression and localization of GLUT1-4 in mouse endometrium, and explored the role of GLUT1-4 in maintaining a proper glucose content in intrauterine milieu, which is beneficial for early embryonic development and subsequent implantation. The results showed that GLUT1-4 was spatiotemporally expressed in mouse endometrium during preimplantation period detected by PCR, immunoblotting, immunohistochemistry and confocal microscopy. Functional blockage or knockdown of some of GLUTs (such as GLUT4) significantly decreased glucose content in uterine cavity fluid and down-regulate the expression of leukocyte inhibitory factor(Lif), and then impaired embryo development and implantation. Moreover, functional blockage or knockdown of GLUT4 expression can decrease the uptake of 2-NBDG and cell proliferation in cultured mouse endometrial epithelial cells(EECs) detected by Flow cytometry and Edu incorporation. Results of this study indicate spatiotemporal expression of GLUT1-4 in mouse endometrium involved in maintaining appropriate glucose concentration in uterine cavity fluid, which is essential for embryo development and implantation. (COI: No)