

SREBP1c, but not by LXR. These results suggest that insulin appears to contribute to post transcriptional modification of ADD1/SREBP1c and sequentially further activates ADD1/SREBP1c gene expression via auto-regulatory mechanism.

D126 Rapamycin Represses Differentiation by Inhibiting the Expression of the Adipogenic Marker

Hye Jin Cho, Sang Dai Park and Jae Bum Kim

School of Biological Sciences, Seoul National University

Insulin is a potent adipogenic hormone that triggers induction of a series of transcription factors governing differentiation of preadipocytes into mature adipocytes. However, the exact links between the insulin signaling cascade and the intrinsic cascade of adipogenesis have been incompletely understood. The immunosuppressant drug rapamycin has been reported to inhibit adipocyte differentiation of 3T3-L1 and F442A cells. In addition, rapamycin treatment blocked further adipogenesis after some degree of differentiation has been preceded. These observations were examined by morphological changes and by northern blotting with adipocyte marker genes including aP2, FAS, ADD1/SREBP1c, PPAR, C/EBP and adipon. These results suggest that rapamycin represses adipocyte differentiation by inhibiting the expression of adipogenic marker. The mTOR is a downstream molecule of insulin signaling pathway and potentially inhibited by rapamycin. Insulin-induced phosphorylation of mTOR has been shown to activate two translational components, 4E-BP1 and p70 ribosomal protein S6 kinase(p70S6K). Therefore, we are currently investigating the involvement of p70S6K in adipocyte differentiation.

D127 Activity of PKC is required for chondrocyte maturation

Young-Bin Lim^{1*}, Jo-Young Suh², Bong-Chul Jang², Yun-Hye Chung² and Jong Kyung Sonn¹

¹Department of Biology, ²Periodontology, Kyungpook University

In order to investigate the role of PKC in chondrocyte maturation, chondrocytes of various differentiation stages such as resting, proliferating, maturing, and hypertrophic chondrocytes from day 17 chick embryo sterna were cultured. Phorbol myristate 13-acetate (PMA) were treated to the cultures and maturation of chondrocyte were examined by measuring activity of alkaline phosphatase. Only maturing chondrocytes showed marked increase in alkaline phosphatase activity while other cells weakly responded to PMA treatment. PMA exerts its effect on the ALP activity by activating PKC as evidenced by modulating PKC activity with PKC activator or inhibitor. Our results suggest that activity of PKC is required for chondrocyte maturation.

D128 Nek2 Localizes to Multiple Sites in Mitotic Cells, Suggesting Its Involvement in Multiple Cellular Functions During the Cell Cycle

Yong Ha Kim^{*}, Jun Yeol Choi, Yontae Jeong and Kunsoo Rhee

School of Biological Sciences, Seoul National University, Seoul 151-742, KOREA

Nek2 is a mammalian protein kinase that is structurally homologous to NIMA, a mitotic regulator in *Aspergillus nidulans*. To understand the possible cellular processes in which Nek2 participates during the cell cycle, we investigated the expression and subcellular localization of Nek2 in mitotic cells. Nek2 protein levels were observed to be regulated in a cell cycle stage-specific manner in cultured cells. Nek2 proteins were localized in both the nucleus and

cytoplasm throughout the cell cycle, but exhibited dynamic changes in distribution, depending on the cell cycle stage. Such dynamic behavior of Nek2 suggests that Nek2 may be a mitotic regulator that is involved in diverse cell cycle events.

D129 Effects of High Molecular Weight WaterSoluble Chitosan During In Vitro Fertilization and Early Embryogenesis in Mice Fed a High-Fat Diet

HeeGon Choi¹, JungRan Cho¹, HyoungMin Lee¹, DongHoon Kwak¹, KyuYong Jung², MinKyo Shin³ and YoungKug Choo¹

¹Division of Biological science, College of Natural Sciences and Medicinal Resources Research Center of Wonkwang University ;

²Department of Pharmacology, Wonkwang University School of Medicine ; ³Department of Herbalogy, College of Oriental Medicine, Wonkwang University School of Medicine

High molecular weight watersoluble chitosan (WSC) with an average molecular weight of 300 kD and a deacetylation level of over 90% can be produced using a simple multistep membrane separation process. It is known that WSC prevents obesity induced by a high-fat diet. The goal of this study was to determine if WSC improved ovarian dysfunction caused by obesity in mice. Mice were fed a high density protein and lipid diet for 4 weeks and administered with 480 mg/kg of WSC for 4 days. The effects of this treatment on weight change, ovulation rate, *in vitro* and *in vivo* fertilization, embryonic development and implantation rate were monitored. The body weight of obese mice fed a highfat diet was markedly reduced by treatment with WSC, but the body weight of mice fed a normal diet was not affected. WSC had significant effects on ovulation rate, *in vitro* and *in vivo* fertilization rates and embryo development, but not on implantation rates. These data suggest that WSC might improve ovarian and oviduct function in obese mice fed a highfat diet, by adjusting internal secretions and metabolic functions.

D130 Effect of Electroacupuncture on the Regeneration of Injured Sciatic Nerve

Young Kun Deung, Dong Heui Kim^{*}, Song Jian Kang¹ and Dong Suck Reu²

Dept. of Basic Science and Institute of Basic Medical Science, Wonju College of Medicine, Yonsei Univ.; ¹Dept. of Physiology, Taishan Medical College; ²Dept. of Biology, Chongju Univ.

To confirm the effect of electroacupuncture on the regeneration of injured sciatic nerve, the change of evoked potential value, the change of acid phosphatase activity in the spinal cord, and morphological change of injured sciatic nerve were examined comparatively in acupuncture group(AG) and control group(CG) after sciatic nerve of guinea pig was injured by purpose. The value of evoked potential after injury of the sciatic nerve was increased in both AG and CG, but the increase rate of that was higher in AG than CG. Acid phosphatase activity of the spinal cord was increased in 1CG and 2AG, but shown are tendency to return to the normal state as time went by. Ultrastructural recovering rate of the injured sciatic nerve was higer in AG than CG. Also, there was developed only adipose tissue in sciatic nerve of AG. As mentioned above, the effect of electroacupuncture on the regeneration of injured sciatic nerve was confirmed experimentally by change of evoked potential, acid phosphatase and ultrastructure. Especially, the effect of electroacupuncture was appeared clearly in an early stage than other treatment stages.

D201 애기장대(Arabidopsis thaliana) 잎 절편에서 NAA와 BA에 의한 Shoot, 부정근, 모용 및 캘러스 형성시의 Determination Time

김승림 · 한태진^{*}

한림대학교 생명과학부, 춘천시 200-702

애기장대(Arabidopsis thaliana)의 생체종인 'Nossen'의 잎 절편을 이용, 식물생장조절물질이 식물 기관 재분화 양상과 기관 재분화를