

P1-01

Anti-obesity Effects of Oriental Herbal Medicine, *Ephedra sinica* : *in vitro* & *in vivo* Analyses

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Adipocytes secrete a variety of factors, some of which (leptin, tumor necrosis factor (TNF) alpha, resistin, lipoprotein lipase (LPL), fatty acid) are thought to be involved in modulation of adipose mass, obesity. To find out whether a few adipocyte markers are influenced by oriental medicines, cultured 3T3-L1 differentiated adipocytes were treated with 100 $\mu\text{g}/\text{ml}$ *Ephedra sinica* (Es) every other day for 12 days. In vivo study, obesity rats induced high fat diet were injected with Es (50 mg/kg body weight), daily for 4 weeks. The results are summarized as follows : in vitro, gene expression of LPL was found to increase, gradually, during preadipocytes differentiated mature adipocytes. Treatments of 3T3-L1 adipocytes with 100 $\mu\text{g}/\text{ml}$ Es increased LPL expression more than in control cells. The expression of leptin mRNA significantly increased after conversion of 3T3-L1 cells to mature adipocytes. Treatments of adipocytes with 100 $\mu\text{g}/\text{ml}$ Es suppressed leptin mRNA. The expression of resistin mRNA in 3T3-L1 preadipocyte did not litter detected. Resistin gene expression is induced during adipocyte differentiation. The resistin expression of 3T3-L1 mature adipocytes treated with Es reversed that of leptin. In vivo, Es injection group significantly reduced food intake and body weight gain. Weights of peritoneal fat and epididymal fat were dramatically increased in control but according to Es treatment, those were significantly decreased. Peritoneal fat cell sizes by microscope were markedly larger in control than normal but reduced in Es injection group. These results indicate that *Ephedra sinica* affects signaling molecular factors, that has shown to be capable of curing and preventing obesity.

P1-02

Astaxanthin 투여에 따른 산란계 난황 중 Carotenoids 조성과 추적

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Astaxanthin egg yolk(AEY)을 생산하여 기능성 식품 개발을 위한 기초 자료를 얻기 위하여 astaxanthin이 경구 투여된 산란계의 난황 중 총 carotenoids 함량과 astaxanthin, zeaxanthin, lutein, canthaxanthin, echinenone 및 β -carotene 등의 함량변화를 연구하였다. Astaxanthin 투여량이나 투여시일에 따라 생체 및 계란 중량은 대조구와 별 차이가 없었고, 난황의 색은 각각 투여 5일 및 7일 이후부터 astaxanthin 투여량이 많을수록 색이 진하였다. 난황 중 총 carotenoids 함량은 astaxanthin을 투여했을 경우 대조구에 비해 5일 후부터 투여량에 비례해서 난황 중 carotenoids 함량이 증가하였다. 산란계에 astaxanthin 투여했을 경우 대조구에 비해 난황 중 zeaxanthin, canthaxanthin, echinenone 및 β -carotene 함량은 기간에 따라 약간의 차이는 있으나 증가하였고, astaxanthin 및 lutein 함량은 뚜렷한 차이가 없었다. 난황 중 각 carotenoids 성분들의 분포비는 전반적으로 zeaxanthin > lutein > β -carotene > echinenone > canthaxanthin > astaxanthin 순이었다.