

또한 골교체질의 지표인 osteocalcin은 서목태와 레반을 섭취한 군에서 유의적으로 낮게 나타남으로써 서목태의 골대사 효과에 프럭토스 폴리머인 레반의 칼슘 흡수성 효과가 상승효과를 가져온 것으로 본다. 이는 서목태와 프럭토스 폴리머인 레반이 새로운 폐경기 골다공증 예방용 특수 영양식품 개발에 이바지 할 수 있으리라 기대한다.

【P4-8】

Effects of PTP1B Inhibitors and Taurine on Blood Lipid Profiles in Adolescents Obesity Model Rats

Sun Hee Cheong[†] · Hyeongjin Cho¹⁾ · Kyung Ja Chang

Department of Food and Nutrition, College of Human Ecology, Inha University, Incheon, Korea

Department of Chemistry, Inha University, Incheon, Korea¹⁾

The protein, called PTP1B (protein tyrosine phosphatase 1B), joins a list of enzymes that mice are associated with obesity. The purpose of this study was to investigate the effects of PTP1B inhibitors and taurine on blood lipid profiles in adolescents obesity model rats. Three week-old thirty-six male Sprague-Dawley rats were randomly assigned to six groups (high fat diet group; HFD group, high fat diet + taurine group; HF + TR group, high fat diet + PTP1B inhibitor A group; HF + A group, high fat diet + PTP1B inhibitor B; HF + B group, high fat diet + PTP1B inhibitor A + taurine group; HF + A + TR group, high fat diet + PTP1B inhibitor B + taurine group; HF + B + TR group). The PTP1B inhibitor A dissolved with 1M NaOH and B dissolved with distilled water were given orally were administered 0.165 mg per 100 g diet. After 8 weeks of feeding these experimental diets, the rats were sacrificed. Liver, epididymis adipose tissue, gastricnemus and psoas weight were measured. Plasma triglyceride, total cholesterol and HDL-cholesterol concentration were analyzed by enzymatic procedures using commercial kits with UV/Vis spectrophotometer at 546 nm, 500 nm and 500 nm, respectively. The statistical analysis was conducted using the SPSS 10.0 program. Mean and standard deviation were calculated for all variables and analyzed by analysis of one-way ANOVA. Relative liver weight of HF + A, HF + A + TR and HF + B + TR groups were significantly lower than the HFD group ($p < 0.05$). Gastricnemus and psoas muscle weight in HF + A and HF + B + TR groups were significantly higher than the rest groups ($p < 0.05$, $p < 0.05$, respectively). Plasma triglyceride (TG) level in HF + A + TR and HF + B + TR groups were significantly lower than the rest groups ($p < 0.05$). Especially, plasma TC level in HF + A + TR group was the lowest compared to the rest groups. On the other hand, plasma HDL-cholesterol level and the ratio of HDL-cholesterol to total cholesterol in HF + B + TR group was significantly lower than HFD and HF + TR groups ($p < 0.05$). Plasma LDL-cholesterol level and the ratio of LDL-cholesterol to HDL-cholesterol in HFD group were significantly higher than the rest groups ($p < 0.05$). Therefore, these results may suggest a possible blood triglyceride, total cholesterol, LDL-cholesterol lowering effect of PTP1B inhibitors and taurine in adolescents obesity model rats.

【P4-9】

Effects of Garlic, Soy Protein and Taurine on Blood Lipid Profiles in Postmenopausal Hyperlipidemic Model Rats

Sun Hee Cheong[†] · Kyung Ja Chang

Department of Food and Nutrition, College of Human Ecology, Inha University, Incheon, Korea

The purpose of this study was to investigate the effects of garlic, soy protein and taurine on blood lipid profiles in postmenopausal hyperlipidemic model rats. Seventy-two female Sprague-Dawley rats weighing 200g were fed a commercial diet for one week. All rats were ovariectomized and then were randomly assigned to eight groups (high fat diet group; HFD group, 2% garlic powder group; GP group, taurine group; TR group, soy protein group; SP group, 2% garlic powder + taurine group; GP + TR group, 2% garlic powder + soy protein group; GP + SP group, taurine + soy protein group; TR + SP group, 2% garlic powder + taurine + soy protein group; GP + TR + SP group). After 8 weeks of feeding these experimental diets, the rats were sacrificed. Liver, adipose tissue, gastricnemus and psoas weight were measured. Plasma triglyceride, total cholesterol and HDL-cholesterol concentration were analyzed by enzymatic procedures using commercial kits with UV/Vis spectro-

photometer at 546nm, 500nm and 500nm, respectively. The statistical analysis was conducted using the SPSS 10.0 program. Mean and standard deviation were calculated for all variables and analyzed by analysis of one-way ANOVA. Relative liver weight of GP + TR and GP + TR + SP groups were significantly lower than the rest groups ($p < 0.05$). Adipose tissue weight around ovary of HFD group was the highest and that of GP + TR + SP group was the lowest. Gastricnemus and psoas muscle weight in GP, SP and GP + TR + SP groups were significantly higher than the rest groups ($p < 0.05$). Plasma triglyceride (TG) level in all groups were significantly lower than HFD group ($p < 0.05$). Especially, plasma TG level in GP + TR + SP group was the lowest compared to the rest groups. On the other hand, plasma total cholesterol (TC) level in GP + TR group was the lowest compared to the rest groups. Plasma HDL-cholesterol level and the ratio of HDL-cholesterol to total cholesterol in GP + SP, TR + SP and GP + TR + SP groups were significantly higher than the HFD and TR group ($p < 0.05$, $p < 0.05$, respectively). LDL-cholesterol level and the ratio of LDL-cholesterol to HDL-cholesterol in GP + TR, TR + SP and GP + TR + SP group were significantly lower than the HFD and GP groups ($p < 0.05$, $p < 0.05$, respectively). Therefore, these results may suggest a possible blood triglyceride, total cholesterol, LDL-cholesterol lowering effect of garlic, taurine and soy protein and synergistic effects of them in postmenopausal hyperlipidemic rat model.

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효모가수분해물의 생리활성에 관한 연구

정은영[†] · 정경희¹⁾ · 김미자¹⁾ · 김영옥 · 장은재

동덕여자대학교 식품영양학과, 동덕여자대학교 비만과학대학원¹⁾

최근 들어, 건강에 대한 관심이 고조됨에 따라 일상생활에서 식품을 통해 단순하게 영양섭취나 기호성을 만족하기보다는 식품섭취를 통해 건강을 향상시킬수 있는 기능성 식품을 선호하게 되었다. 현재까지의 우리나라의 기능성 식품시장은 영세할 뿐 아니라 개발된 기능성 식품의 과학적인 연구들도 또한 미비한 실정이다. Saccharomyces cerevisia 가수분해물은 여러 가지 영양성분이 풍부하여 자율신경 조절기능 향상으로 인한 항스트레스와 항피로 및 면역기능 강화 효과가 있으며 불안증 환자와 월경전증후군을 경험한 여성의 증상을 경감시킨다고 알려져 있다. 이에 본 연구는 식품신소재 중 Saccharomyces cerevisia을 단백질 분해효소로 처리하여 얻은 가수분해물을 이용하여 이물질의 생리활성을 측정하였다. 효모를 단백질가수분해를 하여 얻은 효모가수분해물을 분자량에 따라 10,000~30,000, 10,000이하로 분리 정제하여, 집쥐를 이용하여 각각의 다른 분자량의 효모가수분해물을 0.1 g/kg, 1 g/kg, 5 g/kg을 한달동안 경구투여하였다. 한달 후에 혈액과 식욕조절을 관찰하기 위해 뇌를 적출하였다. 혈액에서는 중성지방, 총 콜레스테롤을 측정하였고, 식욕조절을 관찰하기 위해서 면역조직화학법을 이용하여 뇌에 존재하는 식욕관련 신경전달물질 즉 식욕증진과 관련된 neuropeptide Y (NPY)와 nitric oxide synthase (NOS)을 측정하였다. 실험 결과 체중 증가는 대조군에 비해 분자량 10,000~30,000, 10,000이하에서 모두 높았으며 분자량 10,000~30,000이 10,000이하보다 증가하였으나 통계적 유의성은 없었다. 혈중 중성지방은 대조군에 비해 분자량 10,000~30,000이 높은 경향을 나타냈으나 유의하지 않았고 분자량 10,000이하는 대조군과 분자량 10,000~30,000보다 유의적으로 낮았다($p < 0.05$). 총 콜레스테롤은 대조군에 비해 분자량 10,000~30,000은 유의한 차이가 없었고 반면 분자량 10,000이하는 낮은 경향을 보였으며 그중에서도 5 g/kg군만이 통계적으로 유의한 감소를 보여서($p < 0.05$) 투여량에 따른 차이를 관찰할 수 있었다. 시상하부의 PVN에서 식욕을 증진시키는 신경전달물질인 NPY와 NOS의 발현은 모두 분자량 10,000~30,000에 비해 분자량 10,000이하에서 유의하게 낮았으나($p < 0.05$) 대조군과는 유의적인 차이가 없었다. 따라서 본 연구 결과 분자량 10,000~30,000에서는 혈중 지질 농도와 식욕증진에 관여하는 신경전달물질인 NPY와 NOS 발현이 증가되었으며, 이에 비해 분자량 10,000이하의 혈중지질농도감소와 식욕증진에 관여하는 신경전달물질인 NPY와 NOS의 발현이 감소됨을 관찰 할 수 있었다. 이러한 실험결과로써 효모가수분해의 항스트레스, 항피로, 면역기능강화 이외에도 또 다른 역할, 즉 분자량에 따른 혈중지질농도의 변화와 식욕조절에 관여함을 관찰 할 수 있었다.