in the skeletal muscle of fed pigs. Thirty-six purebred Yorkshire gilts were used at the ages of d 1, 4, 6, 12 and 20 (suckling) as well as d 28 (1 wk post-weaning). Piglets were given intraperitoneally a flooding dose of Phe containing L-[ring-$^2H_5$]Phe in saline. Plasma and loin muscle samples at 30 min post-injection were collected for the determination of tracer Phe enrichment by GC-MS. Total and phosphorylated (Thr56) forms of eEF2 were examined by Western blot. The FSR of skeletal muscle decreased linearly ($P<0.05$) from d 1 (20.8 %/d) to day 28 (5.3 %/d). Both total and the phosphorylated forms of eEF2 abundances were linearly decreased ($P<0.05$) and were correlated with FSR ($P<0.05$; $r=$ 0.48 and 0.53) at the ages of d 1 to 28. However, the ratio of the phosphorylated eEF to total eEF abundance was linearly increased ($P<0.05$). These results indicate that the decreasing FSR of skeletal muscle are associated with a reduced relative expression of the phosphorylated eEF2 in fed pigs during the postnatal growth. Supported by NSERC of Canada.

CARNITINE AND TAURINE (695.1-695.8)

695.1

L-Carnitine increases liver alpha-tocopherol and lowers liver and plasma triglycerides in aging ovariectomized rats

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The objective of this study was to determine whether dietary L-carnitine (CN) influences the status of alpha-tocopherol, retinol and selected lipid parameters in aging ovariectomized rats, a model for the menopausal state. Fourteen Fisher-344 female rats, 18 m old were acclimated for 4 wks and ovarectomized. Rats were assigned to either a control group fed *ad libitum* AIN-93M diet or a CN group fed the same diet supplemented with CN. After an 8 wk feeding period, blood and selected tissues were taken for analyses. No differences were noted in food intake, body weight, or organ weights due to CN. Dietary CN significantly increased liver alpha-tocopherol and tended to increase plasma alpha-tocopherol ($P < 0.09$). No changes in alpha-tocopherol were observed in other tissues including the brain, lungs, and retroperitoneal fat. Retinol levels in plasma and tissues were not affected by supplemental CN. Significant decreases in liver and plasma triglyceride (TG) levels were noted suggesting increased utilization of fatty acids. No differences were observed in the fatty acid profile of tissues. In conclusion CN supplementation enhances vitamin E status and improves the utilization of fat leading to lowering of the liver and plasma levels of TG in aging ovariectomized rats. It remains to be determined whether dietary supplementation of CN enhances antioxidant defense and lowers plasma TG in postmenopausal women.

695.2

Oral taurine supplementation does not increase muscle taurine content or alter substrate metabolism during prolonged submaximal cycling in active males

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This study was designed to determine if 7 days (d) of oral taurine supplementation would 1) increase muscle taurine content at rest, and 2) alter substrate metabolism during 2 hr of cycling at 60% of VO_2max. Eight active males (mean ± SD, 22±1yr, 181.3±2.4cm, 80.9±10.6kg) cycled for 2 hr after 7 d of placebo (PL) ingestion (6g glucose/d) and again following 7 d of taurine (T) ingestion (6g/d). Skeletal muscle biopsies obtained from the vastus lateralis immediately prior to and following exercise revealed no effect of T supplementation on muscle taurine content (mmol/kg dry muscle) at rest (PL, 43.8±15.2 vs. T, 41.7±14.6) or after exercise (PL, 42.6±11.7 vs. T, 43.3±10.8). No difference was observed between conditions in pre and post-exercise muscle glycogen or muscle metabolite contents (lactate, PCr, Cr, ATP, ADP_f, AMP_f, acetyl CoA and acetylcarnitine). Substrate use assessed by respiratory exchange was unaffected by T supplementation (total carbohydrate oxidation (g/hr); PL, 102±45 vs. T, 97±45, and fat oxidation; Pl, 24±12 vs. T, 23±10). Blood lactate and glucose responses to exercise were not different between conditions. Additional plasma and muscle amino acid concentrations were also unaffected by taurine ingestion. These data indicate that dietary taurine supplementation does not alter skeletal muscle taurine content at rest and has no effect on substrate metabolism during prolonged submaximal cycling.

695.3

Effect of L-carnitine feeding with different level on lipid metabolism in obese adult rats

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This study investigated optimal level of L-carnitine for lipid metabolism in obese adult rats. Sprague-Dawley male rats (n=90, 8-month-old) fed 40% fat diet to induce obesity for 4 wks. The rats were blocked into nine groups and fed experimental diet containing non L-carnitine(NC), 0.5% L-carnitine(LC), 2.5% L-carnitine(HC) for 8 wks. Each of three groups was allotted to control, low lysine and low lysine with pivalate respectively. Carnitine palmitoyltransferase1 (CPT1) activity, lipid concentrations in plasma, liver and feces were measured. Daily calorie intake, calorie efficiency ratio and total lipid level of liver and fecal excretions in HC groups were lower than those of NC and LC groups regardless of both low lysine and pivalate. CPT1 activity was not significantly different among all groups. Plasma HDL-cholesterol concentrations of HC groups were significantly higher than NC and LC groups. In conclusion, high level of L-carnitine seemed to increase plasma HDL-cholesterol level and improve lipid metabolism in liver and fecal excretions. *This work was supported by the second stage of Brain Korea 21 project in 2006

**** 695.4

Effect of carnitine (CARN) supplementation in the total parenteral nutrition (TPN) of premature neonates: blood compartmentalization, growth and feeding

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Carnitine (CARN) is considered a conditionally essential nutrient for the premature neonate. The aim of this study was to evaluate the effects of CARN supplementation on blood CARN status, growth parameters and feeding characteristics. Seventy-four premature neonates were given TPN with or without CARN supplementation of 10mg/kg/day. Plasma and red blood cell (RBC) total CARN concentrations were collected on Day 1 and Day 28. Enteral start and wean times (day of life when neonate received ≥50% total non-protein calories from enteral sources), body weight, head circumference, and length were also assessed.

Table 1: CARN, Growth and Feeding Parameters

	Control		CARN	
	Values	n	Valucs	n
Gestational Age (weeks)	28.0 ± 2.4	37	27.2 ± 1.7	37
Birth Weight (kg)	1.016 ± 0.239	37	0.958 ± 0.220	37
Time to Regain Birth-Weight (days)	19.0 ± 7.5	36	18.2 ± 6.3	36
Start enteral feed (days)	9.4 ± 4.7	36	10.9 ± 5.8	35
50% enteral feed (days)	19.1 ± 6.5	31	19.8 ± 7.7	29
Plasma CARN Z-Score#	1.5 ± 2.1	35	8.1 ± 3.5*	33
RBC CARN Z-Score#	-1.8 ± 0.6	36	-1.7 ± 1.0	34

Mean ± S.D.

= Z-Scores calculated from Day 28 values using Day 1 values as reference

*.= $p<0.05$ compared to control

Plasma CARN was significantly increased in the CARN group but there was no difference in RBC CARN, suggesting different compartments. Overall, there was no difference between the control and CARN groups with respect to growth parameters and feeding characteristics.