284 Subsidy for private storing butter and cream in Hungary. I. Feher1, G. Virag2, S. J. Szanocza1,1, H. F. Salem1, and L. Villanyi1,1 Szent Istvan University, Godollo, Hungary, 2Agricultural Intervention Centre, Budapest, Hungary.

The aim of the subsidy for private storing at ensuring the adequate butter supply in European Union. After joining to EU also this kind of subsidies will be used in Hungary The subsidy for private storing could be provided based on the following conditions: 1. for pasteurized cream, which has been mixed with water content between 85-89%, 2. for salted butter made of pasteurized cream or milk in factory permitted by EU and its fat content is 82% at minimum level and its water content is 16% at maximum level, 3. for salted butter made of pasteurized cream or milk in factory permitted by EU and its fat content is 82% at minimum level and its water content is 16% at maximum level. The subsidy is determined by storing cost and possible changing prices of fresh butter and butter-stock.

The condition of subsidy for private storing is to make an contract for storing based on decided demands with Agency of Payment belonging to state member, in which the butter and cream are stored. The subsidy can be claimed in writing form from Agency of Payment for butter and cream having been stored between 15th of March and 15th of August in given year. The application for subsidy should be sent to Agency of Payment, when products have arrived to store within 28 days. The contract for storing is signed, when the application has received at Agency within 30 days. The contracting party or person responsible for storing should keep a record of products stored relevant to contract. In case of contract for private storing the storing period extends between 90 and 210 days. If the contracting party does not keep the deadline, the subsidy will be decreased by 15% and be paid only for that period, when butter and cream were really stored.

Key Words: Subsidy for private storing, Pasteurized cream, Contract for private storing

Horse: Equine production & management

285 Effect of n-3 polyunsaturated fatty acid source on plasma fatty acid profiles of horses. P. D. Siciliano1, S. K. Webel2, L. S. Brown2, L. K. Warren1, T. E. Engle1, and P. D. Burns2,1 Colorado State University, Fort Collins, CO/USA, 2United Feeds, Inc., Sheridan, IN/USA.

Eighteen mature geldings of American Quarter Horse, Arabian, and Thoroughbred breeding, with an average body weight of 569 ± 8 kg were randomly assigned to one of three dietary treatments, control (CTRL, n = 6), ground whole flaxseed (FS, n = 6) or protected n-3 polyunsaturated fatty acid source (PFA, n = 6; United Feeds, Inc., Sheridan, IN, USA) to determine the effect of n-3 fatty acid source on plasma fatty acid profiles. All horses were group-fed brome grass hay ad libitum. All horses were individually fed 0.8 kg as-fed of a vitamin mineral supplement top-dressed with 0.57 kg as-fed of their respective dietary treatment, daily. The total n-3 fatty acid concentration of the top-dressed supplements, calculated as the sum of C18:3-n-3, C20:5-n-3, and C22:6-n-3, was 3.37, 5.56 and 5.02 g/100g diet as-fed for CTRL, FS and PFA, respectively. Experimental diets were fed for a period of 28 d. Blood samples were collected on d 0, 14, and 28 by jugular venipuncture, and plasma was harvested and analyzed for fatty acid composition. The individual plasma fatty acids C16:0, C16:1n-7, C18:0, C18:1n-9, the sum of C18:2n-6 and n-9, C18:3n-3, C20:0, C20:4n-6, C20:5n-3, C22:5n-3, and C22:6n-3 were expressed as a percent of the total plasma fatty acids. The percent total n-3 fatty acid composition of plasma was calculated as the sum of the percentages of total plasma fatty acids for C18:3n-3, C20:5n-3, and C22:6n-3. Data were analyzed as a repeated measures design using the PROC MIXED ANOVA procedure of SAS. Mean square was divided into treatment (Treatment), and those without losses (Control). Overall botanical composition of pastures was evaluated. Chi square analysis of the botanical data showed a relationship between the evidence of consumption (p<0.0001) of Poison Hemlock (Conium maculatum) in problem pastures and MRLS. Subsequent chemical analysis determined that the Poison Hemlock plants contained 0.8-1.0% piperidinic alkaloids that are known to be toxic to animals. To study the clinical response to Conium maculatum in gravid mares, 14 mares were bred for experimental study. At gestational age 45 days, mares were randomly assigned to one of three groups: (1) Control-received no Conium; (2) Low(L)-received Conium at an alkaloid titration of 2.8mg/kg body weight; (3) High(H)-received Conium at an alkaloid titration of 4.3mg/kg body weight. Conium maculatum slurry was administered once per day for 4 days. Foals were observed by transrectal ultrasound. Mares were physically examined and blood samples were collected at times 0h, 1h, 2h, 3h, 4h, 5h, 6h, 24h, 25h, 48h, 49h, 72h, and 73h. Blood samples were analyzed for piperidinic alkaloid concentrations, blood chemistry components, and progesterone levels. Compared to the control mares, the H and L groups both showed increased frequencies of incoordination and tremors
Effects of feeding endophyte-infected tall fescue diets on embryo survival in mares during early gestation. 

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A high incidence of early embryonic death and spontaneous late-term abortions occurred in Kentucky and neighboring states in spring 2001 and 2002. The objective of this study was to evaluate the embryotoxic potential of feeding endophyte-infected tall fescue seed and hay to mares during early gestation. Mares (n = 12) were matched by stage of gestation (d 60-100) and assigned to diets (6/diet) that were fed for 10 days. Diets consisted of endophyte-free (E-) or endophyte-infected (E+; 271 ppb ergot alkaloid content equivalent to 1.36 µg/kg BW/day) tall fescue seed (0.5% BW) mixed with sweet feed (10% CP) as well as ad libitum access to E+ tall fescue or ryegrass hay, for E+ and E- treatments, respectively. Rectal temperatures (RT), blood samples and urine was collected daily. Blood and serum was analyzed for clinical chemistry, progesterone (P4), prolactin (PRL), and 3,4-dihydroxyphenylacetic acid (DOPAC, a catecholamine metabolite) analyses, whereas urine was analyzed for ergot alkaloids. Also, fetal heartbeat and presence of echogenic material in fetal fluids was monitored daily by ultrasonography (US). RT (E+ 37.76 ± 0.03; E- 37.84 ± 0.03 C) and PRL (E+ 14.06 ± 0.76; E- 12.11 ± 0.76 ng/ml) serum concentrations were not different between groups. Measuring the change in concentration from d 0 over time, P4 concentrations were not different (E+ 0.64 ± 1.49; E- 0.55 ± 1.47 ng/ml). There was no negative pregnancy outcome and US showed no increase in echogenic material in fetal fluids. There was a rapid and persistent (p<0.05) decline in DOPAC concentrations in E+ compared with E-mares (2.1 ± 0.14 and 4.4 ± 0.43 ng/ml, respectively). Urinary ergot alkaloid concentration was greater (p < 0.01) in E+ compared with E-mares (532.12 ± 52.51 and 13.36 ± 2.67 ng/mg creatinine, respectively). Although no embryo loss was observed during the current study, the elevated concentrations of urinary ergot alkaloids and the depressed endogenous catecholamine activity indicate that prolonged exposure to E+ tall fescue could be detrimental to embryonic development and survival in horses.

Key Words: Equine, Ergot alkaloids, Catecholamine

The Calpain system and animal agriculture. 

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Even before purification of calpain was first described (Dayton et al., 1974), studies have since established that nearly all (up to 90 % or more) of the tenderness that occurs during postmortem storage at 2-4°C is the result of calpain activity. Most convincing are the studies showing that there is nearly no degradation of actin and myosin during storage at 2-4°C (Goll et al., 1974). Studies have since established that nearly all (up to 90% or more) of the tenderization that occurs during postmortem storage at 2-4°C is the result of calpain activity. Most convincing are the studies showing that there is nearly no degradation of actin and myosin during storage at 2-4°C even for periods as long as 2-3 weeks postmortem. The major calpains in skeletal muscle, cathepsins B, D, and L, all rapidly degrade myosin and actin, whereas the calpains are unique among the known proteolytic enzymes in that they do not degrade either actin or myosin.

Pilot experiments to manipulate beef cattle diets to change muscle Ca concentrations for meat tenderness, and Ca plays a role in calpain activity. The present theory is to manipulate beef cattle diets to change muscle Ca levels and consequently calpain activity and shear force. To test whether dietary Ca manipulations affect tenderness, Angus steers (n=20), from a single source, were assigned to pairs based on an allometric weight. One steer from each pair was assigned to the control treatment (CO) and the other to the low dietary Ca (LC) treatment. All cattle were fed a typical high grain finishing (0.65% Ca) diet starting at 343 kg BW; dietary restrictions were imposed 113 d later at 561 kg BW. The LC received a 0.24% Ca diet for 14, 21 or 28 d prior to harvest and was returned to the CO diet for one feeding 16 h prior to harvest. Individual growth and carcass data were collected. Postmortem muscle temperature and pH were determined for the Longissimus dorsi, Triceps brachii, and Semimembranosus muscles from each carcass at 1, 3, 6, 24, and 48 h post mortem. Warner-Batzler shear force was determined on three steaks from each muscle from each carcass, on d 5, 10 and 15 post mortem. There appeared to be no adverse effect on DMI or ADG when fed a LC diet. Serum Ca levels at evisceration were higher (P<0.01) for LC cattle than CO cattle (11.9 ± 9.3 mg/dL). Muscle pH was higher (P<0.05) for LC at 1 h (6.47 ± 0.25), 3 h (6.16 ± 5.97), 48 h (5.61 ± 5.57) post mortem. Warner-Batzler shear force values did not differ (P>0.2) between treatments on d 5, 10, and 15 for the Longissimus dorsi (3.0 kg ± 0.18) and Triceps brachii (3.1 kg ± 0.15). Shear force was lower (P<0.05) for LC on d 5 for the Semimembranosus (3.6 ± 4.2 kg). Muscle Ca concentration was numerically higher in the LC than CO (38.6 v. 37.3 µg/g). The depletion of Ca from finishing diets did not appear to have adverse effects on performance, but did increase serum Ca levels and altered muscle pH and shear force values of the Semimembranosus.

Key Words: Beef, Muscle, Calcium

The influence of early postmortem protein oxidation on beef quality. 


The objective of this study was to examine the impact of early postmortem protein oxidation on the color and tenderness of beef steaks. To obtain a range of oxidation levels, both longissimus dorsi et lum- borum (LDL) muscles from each of ten beef steers fed a finishing diet with vitamin E (1000 IU per head per day, minimum of 126 d [VITE], n = 20 muscles) and from another ten beef steers fed the same finishing diet without vitamin E (CON diet, n = 20 muscles) were used. Within 24 h after harvest, LDL muscles from each animal were cut into 2.54 cm thick steaks and individually vacuum packaged. Steaks from each animal were assigned to a control group (not irradiated) and an irradiated group (average dose = 6.4 kGy). Steaks were irradiated within 26 h postmortem and were aged at 4°C for 0, 1, 3, 7, and 14 d after irradiation. Steaks from each diet/irradiation/aging time treatment were used to determine color, shear force, and degree of protein oxidation (carbonyl content and sulfhydryl content). Steaks from animals fed VITE diet had significantly higher α-tocopherol contents than steaks from animals fed the CON diet. At 0 d post-irradiation, within diet,