P-17. Uncoupling proteins (UCP) potentially suppress mitochondrial superoxide production in skeletal muscle of fasted chickens(Abstracts of the International Symposium on Recent Advances in Animal Science(IS-RAAS),Joint meeting of 2^<nd> IS-AS and 3^<rd> IS-IFS)

P-17. Uncoupling proteins (UCP) potentially suppress mitochondrial superoxide production in skeletal muscle of fasted chickens

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Little is known about the precise physiological roles of the UCP1-homologues (UCP2, UCP3, avian UCP). The confusing aspect regarding the physiological characterization of these UCP variants is that their expression was enhanced in response to fasting, a peculiar result considering that the enhanced expression of these variants occurred in muscle in the fasted state, a basal metabolic state in which energy expenditure would be expected, instead, to be depressed. The aim of this investigation, using skeletal muscle from fasted chickens, was to examine alterations in the expression of gene encoding for avian UCP. We also wished to examine altered transcription of key enzymes and transcriptional factors relevant to lipid flux across the mitochondrial β-oxidation pathway, and to clarify whether up-regulation of avUCP modulates ROS production by mitochondria. avUCP transcription was increased 7.7-fold after a 24 h fast and diminished about 5.0-fold higher than baseline after 48 h of fasting. CPT-I gene expression was enhanced remarkably after 24 h of fasting and was diminished after 48 h, similar to the results seen for avUCP, while members of the mitochondrial β-oxidation pathway, LCAD and 3HADH, were up-regulated after 24 h of fasting, with levels then increasing linearly with time. ROS analysis with LDCL method exhibited the percentage decreases of mitochondrial ROS production following exposure to palmitate, probably via uncoupling, which were 44 and 86 % at time 0 and 24 h of fasting, respectively. This is the first investigation demonstrating regulation of mitochondrial ROS via UCP in chicken skeletal muscle in response to fasting.

P-18. *In vitro* gas production measurements and estimated energy value and microbial protein to investigate associative effects of untreated or biological treated rice straws with berseem hay

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An *in vitro* gas production technique was used to investigate associative effects of untreated or biological treated rice straw with berseem hay (H). The rice straw (URS) was biological treated with white rot fungi (TRS_F) or mushroom (TRS_{Mr}). Ground samples (200 mg DM) of H, URS, TRS_F, TRS_{Mr} and the mixtures (50% w/w) of H + URS, H + TRS_F and H + TRS_{Mr} were incubated in 100 ml glass syringes with rumen fluid obtained from fistulated sheep fed berseem hay and commercial concentrate mixture twice a day. Cumulative gas production was recorded at 3, 6, 9, 12, 24, 48, 72 and 96 h of incubation and the kinetics of gas production was described by using the equation $Gas(t) = b(1\text{-}exp\text{-}c(t\text{-}L))$. Treatment of rice straw with white rot fungi or mushroom significantly decreased ($P < 0.05$) gas production. The gas production volume was highest for hay ($P<0.05$) and greater for URS ($P<0.05$) than TRS_{Mr} and TRS_F while, the gas production was similar for TRS_{Mr} and TRS_F. Total gas production at 96 h and the maximum rate of gas production increased when URS, TRS_F or TRS_{Mr} were mixed with hay. The metabolizable energy (ME) and net energy (NE) were higher ($P<0.01$) for H, URS, H+ URS, H+TRS_F and H+TRS_{Mr} than for TRS_F and TRS_{Mr}. The organic matter digestibility (OMD %) and microbial protein were higher ($P<0.01$) for H,