

**Results:** Mean  $\pm$  SD age and BMI was  $20.5 \pm 4.5$  years and  $22.3 \pm 3.1$  kg/m<sup>2</sup> respectively. The majority of participants were female (79%) of Australian nationality (85%) and 55% ( $n = 686$ ) reported consuming supplements. There was no significant difference in age, BMI and nationality between supplement users and non-users, however women were more likely to use supplements ( $p < 0.001$ ) than men. The most popular supplements were multivitamins (28%), vitamin C (28%), multivitamins with iron or other minerals (27%) and iron (20%). The majority of supplement users reported daily consumption (48%).

**Conclusions:** Micronutrient supplement use is prevalent in University students. Understanding the reasons why individuals consume supplements is an important next step to identify strategies to reduce consumption of these often unnecessary additional vitamins and minerals in the diet.

**Funding source(s):** N/A.

#### DIETARY PHOSPHORUS AND PHYTASE AND PERFORMANCE OF BROILER CHICKENS FROM DAY 22 TO 49 POSTHATCH

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**Background/Aims:** The available phosphorus (AP) requirement of broilers (22–49 days post-hatch) fed a sorghum based diet with or without phytase supplementation were investigated.

**Methods:** Male broiler chicks (21 days old) were weighed and randomly allocated into 40 pens with 10 birds per pen. The experimental diets contained graded levels of AP (2.0 to 5.0 g/kg) in the increments of 1.0 g/kg. The calcium level was 9.0 g/kg diets. All the diets were prepared with or without phytase (Phyzyme XP, 10000 FTU/kg diet) supplementation. Each diet was fed to five replicate pens. Body weight and feed intake were recorded weekly and feed conversion ratio (FCR) calculated.

**Results:** Body weight, feed intake and FCR of birds on diets containing AP of 2.0 g/kg without supplemental phytase at day 49 were significantly impaired ( $p < 0.05$ ) compared to other treatments. Phytase supplementation improved performance of bird fed on diets containing AP of 2.0 g/kg and had no benefit for birds fed diets containing AP of 3.0 g/kg or higher.

**Conclusions:** Dietary AP of 3.0 g/kg or 2.0 g/kg with supplemental phytase met phosphorus requirement of broilers from 22 to 49 days of age.

**Funding source(s):** Rural Industries Research and Development Corporation.

#### DIETARY PHOSPHORUS AND PHYTASE AND PERFORMANCE OF BROILER CHICKENS FROM DAY 1 TO 21 POSTHATCH

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**Background/Aims:** Most publications of available phosphorus (AP) requirements in broilers are derived from corn-soybean meal diets. This study was to investigate AP requirement of broilers fed on sorghum based diets with or without phytase (Phyzyme XP).

**Methods:** Day-old Ross male broiler chicks were randomly allocated into pens with 10 birds/pen. Each of the diets was fed to five replicate pens. The experimental diets contained AP from 2.5 to 5.5 g/kg for starter (days 1–14) and 2.0 to 5.0 g/kg for grower (days 15–21) in the increments of 1.0 g/kg. The calcium level was 10.0 g/kg for starter and 9.0 for grower, respectively.

**Results:** Body weight, feed intake, tibia bone and toe ash contents of birds on diets containing AP of 2.5 or 2.0 g/kg without phytase were significantly lower ( $p < 0.05$ ) than all other treatments. However, with phytase the growth these measurements of the birds were similar to those on diets with higher AP levels. Phytase supplementation to diets containing 3.5 or 3.0 g/kg AP or higher gave no further improvements in growth performance

**Conclusions:** The results suggested that AP of 2.5 or 2.0 g/kg with supplemental phytase and 3.5 or 3.0 g/kg without supplemental phytase met phosphorus requirement of broilers from days 1 to 21.

**Funding source(s):** Rural Industries Research and Development Corporation.

#### EQUINE VITAMIN K ABSORPTION

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**Background/Aims:** Vitamin K is involved in many physiological processes beyond blood coagulation. There are a number of forms of vitamin K: phyloquinone (K<sub>1</sub>), menaquinones (K<sub>2</sub>) and menadione (K<sub>3</sub>) that is synthetic and added to animal diets. The objective of this study was to determine the absorption efficiency of different isoforms of vitamin K.

**Methods:** Twelve mature geldings were allocated to six groups in a random crossover design. There were six treatments; control, K<sub>1</sub>, K<sub>2</sub> (in the form of menatetrenone, MK-4), K<sub>3</sub> and KQ (Quinacranone™, a soluble form of K<sub>1</sub> and K<sub>2</sub> in the ratio of 10:1). These were administered as a 200 mg oral bolus. Blood sampling was undertaken for 480min. In the last treatment K<sub>1</sub> (200 mg) was administered intravenously and blood sampled for two hours. Plasma was analysed for K<sub>1</sub>, MK-4 and K<sub>3</sub>.

**Results:** The highest plasma K<sub>1</sub> concentrations occurring with KQ ( $p = 0.0001$ ). Both KQ and K<sub>1</sub> showed no conversion to K<sub>3</sub> or MK<sub>4</sub> in plasma. K<sub>3</sub> was well absorbed, but there was no detectable conversion to MK-4. Bioavailability was calculated for oral treatments relative to intravenous K<sub>1</sub> (100%); 0.45% for KQ, 0.14% for K<sub>1</sub>.

**Conclusions:** The soluble form of the vitamin, KQ was the most efficiently absorbed. There is no specific conversion of K<sub>1</sub> to K<sub>3</sub> or K<sub>3</sub> to MK-4 in plasma in the horse, contrary to what occurs in some other mammals.

**Funding source(s):** N/A.

#### HIGH CALCIUM AND IRON DEFICIENCIES IN AN ELDERLY RURAL SOUTH INDIAN POPULATION

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**Background/Aims:** Severe deficiency in calcium and iron can lead to osteoporosis and anaemia, especially in the elderly. We aimed to assess the nutritional status of rural dwelling elderly south Indians.

**Methods:** In 24 villages in the Rishi Valley, South India, we collected demographic, anthropometric, and dietary information on consenting adults in a case-control study of hypertension. Dietary intake was obtained using a culturally appropriate, 24 hour dietary recall questionnaire. Energy and nutrient intake were calculated using a purpose-built South Indian food database.

**Results:** Data were available for 222 adults: 57% men, median age 60 years (interquartile range, IQR 50–70). Approximately 26% had a BMI less than 18 kg/m<sup>2</sup>. More women (96%) than men (84%) were deficient in calcium ( $p = 0.007$ ). Median calcium intake was 420 mg/day (IQR 317–530) in men and 315 mg/day (IQR 242–407) in women; less than the Indian RDI of 600 mg/day. Approximately 98% of the sample had anaemia. Median iron intake for men (14.8 mg/day, IQR 11–18) and women (12 mg/day, IQR 10–15) were also below the Indian RDI of 17 mg/day for men and 21 mg/day for women.

**Conclusions:** Intake of calcium and iron is at a critically low level in this rural South Indian elderly community. Community based nutritional interventions are needed to improve intake of calcium and iron rich foods, especially in elderly women.

**Funding source(s):** NHMRC.

#### IODISED SALT HAS YET TO REACH THE RURAL POOR OF INDIA

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