Background: Protein energy malnutrition is a widespread nutritional problem. The leading food crop that provides the major nourishment in over half of the world’s population is rice while an important source of dietary protein is mungbean. The physical properties of dietary fiber and its presence in the cell wall of plants may affect the digestibility of protein in foods. This led to considerable attention with regards to the effect of dietary fiber on protein digestibility and utilization. **Objective:** To determine the effect of dietary fiber on the *in vitro* and *in vivo* protein digestibility from raw and processed rice and mungbean in rats. **Materials and Methods:** Two varieties of rice, high (*Doongara*) and low (*Japonica*) amylose, and mungbean (*Berken*), raw and processed, were studied. *In vitro* protein digestibility and dietary fiber analysis of foods were determined using multi-enzyme technique and CSIRO method, respectively. Net protein ratio (NPR) and utilization (NPU), biological value (BV) and true digestibility (TD) of processed rice and mungbean were determined in male weanling Wistar strain rats.

**Results:** The *in vitro* digestibility of the two varieties of rice and mungbean were significantly improved by 60-77% and 40-136%, respectively, upon processing. The dietary fiber content of rice ranged from 0.9-1.7 g/100 g while for mungbean, 13.9-17.8 g/100 g. The *in vivo* results showed that both varieties of rice raw or processed gave a high BV of 99% except for the boiled Doongara rice with a BV of 75%. The process of boiling, pressure cooking and germination of mungbean produced consistently high TD and NPU. **Conclusion:** Dietary fiber present in rice and mungbean did not have a negative effect on protein digestibility and utilization. The effect of dietary fiber on protein digestibility and utilization will depend on the variety and processing of rice and mungbean.