

## Identification the first limiting amino acid in cooked polished white rice fed to weanling holztman rats

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### Abstrak

Forty-eight male weanling rats (91 g) were utilized to study the nutritional adequacy of cooked polished white rice. Rats were individually housed, and allowed ad libitum access to one of six treatment diets. Treatment diets were 1) polished white rice plus 10% casein and 0.18% methionine, CAS, 2) polished white rice, WHR, 3) polished white rice plus 0.45% lysine, LYS, 4) polished white rice plus 0.40% methionine, MET, 5) polished white rice plus 0.30% threonine, THR, 6) polished white rice plus 0.45% lysine, 0.40% methionine, and 0.40% threonine, COM. Rice was cooked prior diet formulation using a 3 to 1 ratio of water to rice. Vitamins (AIN-76) and AIN minerals were added to all diets to meet NRC (1978) requirements. Rats fed CAS diets were significantly heavier on d 21 ( $P < 0.05$ ) than rats on COM, LYS, MET, THR, or WHR diets, (219.9 vs. 171.6, 153.2, 153.2, 148.3, or 155.4 g respectively). Supplementation of the most deficient essential amino acids, lysine (LYS) or methionine (MET) did not improve ( $P > 0.05$ ) rat performance over WHR fed rats, Average daily gain (ADG) for CAS was 6.1 g/d and ADG for LYS and MET was 3.0 g/d. The addition of threonine (THR) significantly ( $P < 0.05$ ) reduced ADG when compared to WHR diets (2.7 vs. 3.0 g/d). When rats were fed to COM diet significant ( $P < 0.05$ ) improvement in ADG was observed compared to WHR fed rats (4.8 vs. 3.0 g/d). The increased gains achieved with COM diet and the poor gains observed with the single amino acid diets (LYS, MET, or THR) would suggest that polished white rice is limiting in more than one essential amino acid.