Supplementary Table 1. Nutrient composition of rodent feeds

	Teklad Global 2018	Teklad Global 2018SX (Sterilizable)	Teklad Custom TD.04539 (Casein)
Protein (%wt)	18.6	18.6	15.9
Carbohydrate (%wt)	44.2	44.2	62.8
Fat (%wt)	6.2	6.2	6.2
Cellulose (%)	N.R.	N.R.	5
Crude fiber (%)	3.5	3.5	N.R.
Calcium (%)	1.0	1.0	0.7
Phosphorus (%)	0.7	0.7	0.7
Non-phytate phosphorus	0.4	0.4	0.6% inorganic sources (calcium phosphate and potassium phosphate) and 0.1% from casein
Notes	Ingredients: Carbohydrates: ground wheat, ground corn, wheat middlings. Protein: dehulled soybean meal, corn gluten meal, L-lysine, DL-methionine Fat: soybean oil	Ingredients: Carbohydrates: ground wheat, ground corn, wheat middlings. Protein: dehulled soybean meal, corn gluten meal, L-lysine, DL-methionine. Fat: soybean oil	Ingredients: Carbohydrates: sucrose, corn starch, maltodextrin Protein: casein Fat: soybean oil Vitamins: AIN-93-VX, choline bitartrate Mineral mix (calcium-phosphate deficient) Calcium phosphate dibasic, calcium chloride, potassium phosphate monobasic

N.R., not reported

Supplementary Table 2.

	AC	AC + Casein	Non-AC + Casein
Location of experiments	IUSM	IUSM	Purdue University
Duration of study	28wk	28wk	30wk
Diet	Teklad Global 2018SX (sterilizable)	Teklad Global 2018SX (sterilizable) and Envigo custom diet TD.04539	Teklad Global 2018 (non-sterilizable) and Envigo custom diet TD.04539
Intestinal dissection protocol	Moe et al.[1]: duodenum was dissected 1cm proximal to pyloric-duodenal junction to ~50cm of ileocecal junction. Jejunum was ~30cm of ileocecal junction	Moe et al.[1]: duodenum was dissected 1cm proximal to pyloric-duodenal junction to ~50cm of ileocecal junction. Jejunum was ~30cm of ileocecal junction	Vorland et al.[2]: duodenum was dissected from pyloric-duodenal junction until the ligament of Treitz and ~8cm of jejunum distal to the ligament.
RNA extraction method	Qiagen MiRNeasy Mini Kit	Qiagen MiRNeasy Mini Kit	R6812-00, Omega Bio-tek
Biochemistries and gene expression	All performed at IUSM	All performed at IUSM	All performed at IUSM
Other			Rats were placed in metabolic cages 4 days before sacrifice

AC, autoclaved diet; Non-AC, non-autoclaved diet; IUSM, Indiana University School of Medicine.

1. Moe SM, Radcliffe JS, White KE, et al. The pathophysiology of early-stage chronic kidney disease-mineral bone disorder (CKD-MBD) and response to phosphate binders in the rat. *J Bone Miner Res.* 2011;26(11):2672-2681.
2. Vorland CJB, A.; Lachcik, P.J.; Srinivasan, S.; Chen, N.X.; Moe, S.M.; Hill Gallant, K.M. . Kidney Disease Progression Does Not Decrease Intestinal Phosphorus Absorption in a Rat Model of Chronic Kidney Disease-Mineral and Bone Disorder. *J Bone Miner Res.* 2019;Pending minor revisions.

Supplemental Figure 1. Experimental Design