

PSII-14 Effect of Hydrolyzed Spray-Dried Bovine Plasma and Spray-Dried Bovine Plasma Sources on Growth Performance of Weanling

Pigs. Charmaine D. Espinosa¹, Joy Campbell², Hans H. Stein¹, ¹University of Illinois at Urbana-Champaign, ²APC, LLC

Abstract: An experiment was conducted to test the hypothesis that hydrolyzed spray-dried plasma (H-SDBP) perform similar to spray-dried bovine plasma (SDBP) in diets for weanling pigs with respect to growth performance of pigs housed in unsanitary pens. A control diet based on corn, soybean meal, and 9% soy protein concentrate (SPC) was formulated. Four diets containing either SDBP (i.e., 2.5 or 5.0%) or H-SDBP (i.e., 2.8 or 5.6%) that partially or fully replaced SPC were also formulated. A randomized complete block design with 240 weanling pigs (6.52 ± 0.98 kg), 5 diets, 4 pigs per pen, and 12 replicate pens per diet was used. Pigs were fed the experimental diets for the first 14 d, whereas a common phase 2 diet was fed to pigs from d 15 to 42. Data were analyzed using the Mixed Procedure of SAS with diet as the fixed effect and weaning group as the random effect. Linear effects of SDBP and H-SDBP on growth performance were also determined using contrast statements. From d 1 to 14, fully replacing SPC with SDBP or H-SDBP increased ($P < 0.05$) average daily gain (ADG), gain:feed, and body weight of pigs (Table 1). During this period, linear ($P < 0.01$) increases in ADG, gain:feed, and body weight of pigs were also observed as dietary concentrations of SDBP increased. When pigs were fed the common diet from d 15 to 42, final body weight of pigs was increased (linear, $P < 0.05$) as concentration of SDBP or H-SDBP increased in the diet. Overall, ADG of pigs linearly increased ($P < 0.05$) as dietary concentration of both plasma sources increased. In conclusion, both plasma sources are effective in increasing pig growth performance.

Table 1. Growth performance of pigs fed experimental diets¹

Item	SPC	2.5% SDBP ²	5.0% SDBP	2.8% H-SDBP ²	5.6% H-SDBP	SEM	P-value
d 1 to 14							
Initial body weight, kg	6.51	6.53	6.51	6.52	6.52	0.291	0.847
ADG ^{3,4} , kg	0.110 ^c	0.128 ^{bc}	0.162 ^a	0.107 ^c	0.141 ^{ab}	0.011	<0.001
ADFI ³ , kg	0.207 ^b	0.208 ^b	0.243 ^a	0.189 ^b	0.216 ^{ab}	0.013	0.025
G:F ^{3,4}	0.532 ^c	0.614 ^{ab}	0.668 ^a	0.569 ^{bc}	0.655 ^a	0.039	0.011
Final body weight ⁵ , kg	8.06 ^c	8.34 ^{bc}	8.79 ^a	8.02 ^c	8.48 ^{ab}	0.379	<0.001
d 15 to 42							
ADG, kg	0.551	0.578	0.549	0.570	0.577	0.016	0.114
ADFI, kg	0.771	0.792	0.771	0.783	0.814	0.022	0.199
G:F	0.715	0.729	0.713	0.727	0.707	0.010	0.345
Final body weight ⁵ , kg	23.46	24.51	24.15	23.99	24.61	0.749	0.104
d 1 to 42							
ADG ⁵ , kg	0.403	0.428	0.420	0.416	0.431	0.012	0.120
ADFI, kg	0.583	0.597	0.594	0.587	0.616	0.017	0.313
G:F	0.694	0.718	0.708	0.709	0.700	0.009	0.239

¹Data are least squares means of 12 observations for all treatments.

²SPC = soy protein concentrate; SDBP = spray-dried bovine plasma; H-SDBP = hydrolyzed spray-dried bovine plasma.

³ADG = average daily gain; ADFI = average daily feed intake; G:F = gain to feed ratio.

⁴Linear ($P < 0.01$) increase with increasing levels of SDBP.

⁵Linear ($P < 0.05$) increase with increasing levels of SDBP or H-SDBP.

*Means within a row lacking a common letter are different ($P < 0.05$).

Keywords: bovine plasma, growth performance, hydrolyzed bovine plasma