

ABOUT SPRAY DRIED RED BLOOD CELLS



Spray Dried Red Blood Cells (SDRC) and Spray Dried Plasma (SDP) are made from animal blood hygienically collected during the production of either beef or pork meat for human consumption. APC's processing includes immediate collection of the whole blood into our closed, stainless steel collection system. APC never uses floor blood for our products.



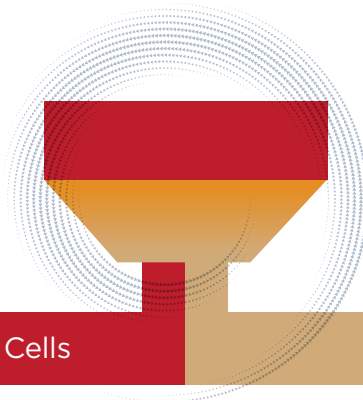
HYGIENICALLY COLLECTED WHOLE BLOOD

The collected animal blood is centrifuged (spun at high speeds) which separates the whole blood into two distinct fractions, red blood cells or plasma.

The liquid red cell and plasma fractions are then spray dried and packaged for use in food for swine, poultry, aquaculture, ruminants, and pets.

APC's spray drying technique allows for superior processing yields that provide high quality protein products with low variability in protein content.

CENTRIFUGE



Highly Digestible Red Blood Cells

Plasma Functional Proteins



AP 300

Whole Blood Powder



AP 301

Red Cells



AP 301G

Granular Red Cells



AP 920

Plasma Powder



APPETEIN

Granular Plasma

Spray dried blood cells (AP 301/301G) provide more consistent, higher quality protein and amino acids for poultry compared to traditional rendered (drum or ring dried) blood meal. Spray dried blood cells are a co-product of the production of spray dried plasma. Unlike traditional rendered blood meal, bovine or porcine blood used to produce spray dried plasma and spray dried blood cells is collected separately into an enclosed system that prevents contamination of the blood from the meat production process. Spray drying results in less damage to high quality proteins than traditional rendered blood meal that are exposed to prolonged high temperatures, which reduce digestibility of proteins and amino acids like lysine.

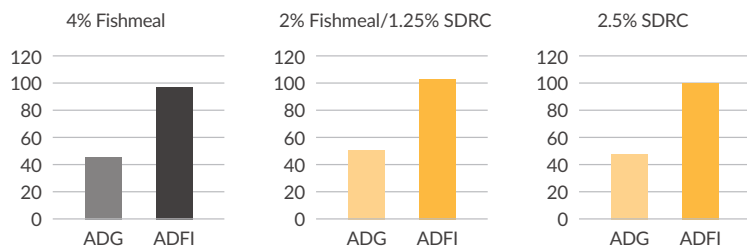
	Traditional Blood Meal Processing	How APC Produces Spray Dried Blood Cells
Source	Collected Blood	Hygienically Collected Blood Used to Make Spray Dried Plasma
Collection	Includes Floor Blood with Contaminants from the Meat Production Process	Enclosed, Controlled System that Excludes Contaminants from the Meat Production Process
Source	Whole Blood	Blood Cells Separated from Plasma
Category	Processed Animal Proteins	Spray Dried Blood Products
Heat Treatment	Strong ~2h @ 100° C	Mild 80°C throughout its substance
Protein	85% - 90%	>92%

SPRAY DRIED RED CELLS FOR POULTRY

Spray dried red cells (SDRC) can be used as a beneficial ingredient in broiler and layer diets to improve key production measures.

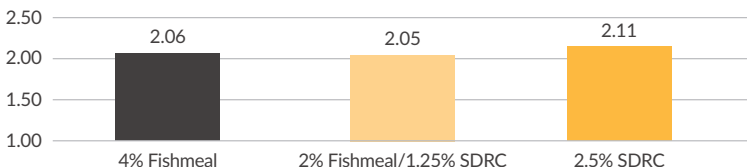
2.5% SDRC IMPROVE AVERAGE DAILY GAIN AND FEED INTAKE IN BROILERS COMPARED TO 4% FISHMEAL DIET¹

CUMULATIVE DATA TO DAY 49 OF AGE



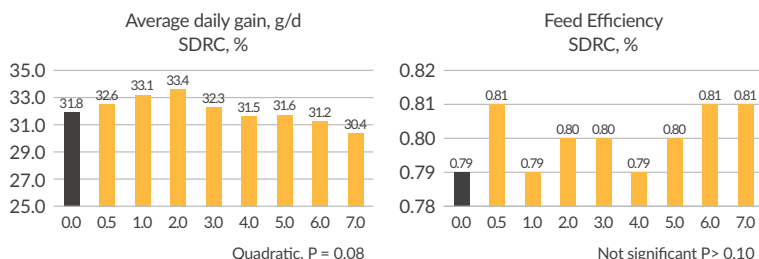
SDRC IMPROVE FEED EFFICIENCY COMPARED TO FISHMEAL IN BROILERS²

CUMULATIVE DATA TO DAY 49 OF AGE



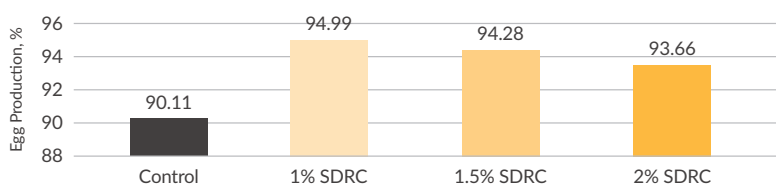
GRADED LEVELS OF SDRC IMPROVE AVERAGE DAILY GAIN AND FEED EFFICIENCY WHEN USED TO REPLACE SOYBEAN MEAL IN BROILER DIETS³

DIETS FED TO DAY 18



SDRC IMPROVES LAYER EGG PRODUCTION⁴

CUMULATIVE DATA TO DAY 49 OF AGE



AP 301/301G COMPOSITION AND STANDARDIZED DIGESTIBLE AMINO ACIDS

	TOTAL AA, %	DIGESTIBILITY, %	SID DIGESTIBLE AA, %
Lysine	8.2	87.4	7.2
Methionine	0.6	92.0	0.5
Cysteine	0.6	73.0	0.4
Threonine	2.8	93.5	2.6
Tryptophan	1.2	89.7	1.1
Isoleucine	0.6	61.1	0.4
Leucine	13.4	96.4	12.9
Valine	9.2	96.2	8.8
Arginine	4.0	88.6	3.5
Histidine	7.5	94.6	7.1

Benefits & Recommended Use of SDRC in Broiler Feeds

- 2.5% SDRC can replace fishmeal and result in better growth and feed intake.
- In corn-soybean meal diets, up to 3% SDRC can improve growth and feed efficiency.
- SDRC can be used to provide a high-quality protein source.
- SDRC are a source of highly digestible protein and amino acids.

Benefits & Recommended Use of SDRC in Layer Feeds

- SDRC (1-2%) increases egg production by 5% during the peak production period.
- Shell strength is increased when diets contain SDRC.
- Albumin height and yolk color maintain uniformity when hens are fed SDRC.

^{1,2}Gao, Y. et. al., 1997. Comparison of AP301 and fishmeal in broiler diets. Beijing Agricultural University. APC Report

³Frugé, E.D., S. Powell, T.D. Bidner and L.L. Southern. 2011. Effect of incremental dietary levels of red blood cells on growth performance of broilers. J. Appl. Poult. Res. 20:129-135

⁴1997. APC Internal Data



For more information, contact an APC Sales or Technical Services Representative