

# 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 blood collected from the floor for our products.

AQUA



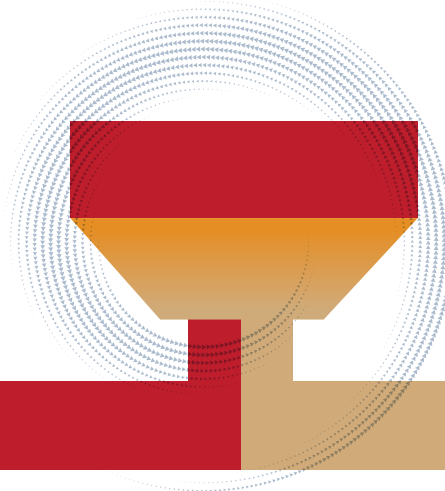
## Hygienically Collected Whole Blood

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



RED CELL POWDER



GRANULAR RED CELLS



PLASMA POWDER



GRANULAR PLASMA

## Spray Dried Red Blood Cells

- 92% Protein
- Highly digestible: 96-98%
- Contains high levels of key amino acids

## Product Forms

**AP 301** Spray Dried Red Cells - powder  
**AP 301G** Spray Dried Red Cells - granulated

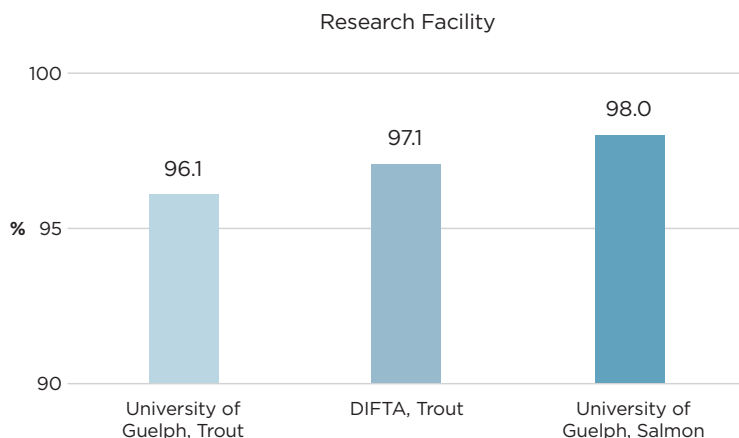
**Packaging** 25 kg bag | Totes

**Available in** 100% Bovine | 100% Porcine

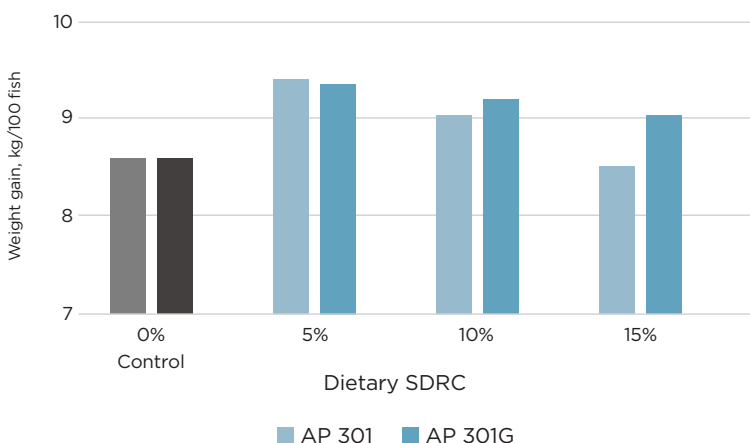
## SPRAY DRIED RED CELLS FOR AQUACULTURE

Spray Dried Red Cells (SDRC) can be used as a partial replacement for fishmeal or other protein sources. SDRC improve amino acid balance and provide superior digestibility.

### SDRC SHOW VERY HIGH DIGESTIBLE PROTEIN IN TROUT & ATLANTIC SALMON STUDIES<sup>1</sup>



### SDRC REDUCE RELIANCE ON FISH MEAL AND IMPROVE WEIGHT GAIN IN ATLANTIC SALMON<sup>2</sup>



### PROTEIN & ESSENTIAL AMINO ACIDS OF COMMON INGREDIENTS USED IN AQUACULTURE FEED

| NUTRIENT, %   | AP 301/301G SDRC | BLOOD MEAL | FISH MEAL | SOYBEAN MEAL |
|---------------|------------------|------------|-----------|--------------|
| Protein       | 92.0             | 89.7       | 65.4      | 45.3         |
| Ash           | 4.0              | 2.8        | 16.1      | 6.4          |
| Arginine      | 4.0              | 3.8        | 3.9       | 3.4          |
| Histidine     | 7.5              | 5.6        | 1.6       | 1.2          |
| Isoleucine    | 0.6              | 1.2        | 2.7       | 2.1          |
| Leucine       | 13.4             | 11.0       | 4.7       | 3.3          |
| Lysine        | 8.2              | 8.0        | 4.9       | 2.8          |
| Methionine    | 0.6              | 1.0        | 1.8       | 0.6          |
| Phenylalanine | 7.1              | 6.1        | 2.6       | 2.3          |
| Threonine     | 2.8              | 4.0        | 2.7       | 1.8          |
| Tryptophan    | 1.2              | 1.1        | 0.7       | 0.6          |
| Valine        | 9.2              | 7.5        | 3.3       | 2.2          |

## SDRC Benefit Aquaculture Production

Nutrient composition is highly uniform (92% protein) and may reduce variation of nutrient content in aquaculture feed.

Protein is highly digestible (96% to 98%).

Contains high Lysine and Arginine especially favored for shrimp diets.

Environmentally friendly ingredient because of its high digestible protein and low phosphorus and ash content.

Very palatable and a good attractant for fish and shrimp.

Provides a dark colored ingredient favored for use in aquaculture feeds.

Reduces reliance on use of fish meal.

## Recommended Usage

Use of 5% to 15% SDRC in feed for carnivorous fish like trout and salmon provides similar growth and feed efficiency compared to fish meal.

Typically use 2% to 6% SDRC in shrimp feed. SDRC consistently provides more digestible protein than that of traditional rendered blood meal or poultry byproduct meal.

<sup>1</sup>Cho, Y.C. 1996, 1997. University of Guelph, Canada; Nielsen, A.K. 1996. Danish Institute for Fisheries and Aquaculture, Denmark

<sup>2</sup>Cho, Y. C. 1997. University of Guelph, Canada



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