



## APS45-18F Whole Colostrum Powder

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### Description and Suggested Applications

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APS45-18F (45% minimum protein, 18% minimum IgG) is an agglomerated, pasteurized, full cream, whole colostrum powder produced from first milking colostrum only. APS45-18F is processed both at low pressures and temperatures and is spray dried using indirect steam to maintain maximum bioactivity. The colostrum used to produce APS45-18F is from antibiotic free sources.

Suggested applications include: immune system enhancement, nutritional supplementation, digestive health improvement, protein supplementation and alternative treatment for general health.

### Major Active Component Analysis

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	<u>Specification</u>	<u>Typical</u>	<u>Method*</u>
Protein, % (Nx6.38) db	45.0 min	53.7	AOAC 991.20 18th Ed., page 33.2.11
Total Immunoglobulins, %	18.0 min	20.0	HPLC (IX, dry basis)
Immunoglobulins (Type G1 & G2), %	15.0 min	19.2	HPLC (IX, dry basis)
Immunoglobulins (Type A), %	0.50 min	0.55	HPLC (IX, dry basis)
Immunoglobulins (Type M), %	0.20 min	0.25	HPLC (IX, dry basis)
Immunoglobulins (Type D), %	0.02 min	0.03	HPLC (IX, dry basis)
Immunoglobulins (Type E), %	0.007 min	0.01	HPLC (IX, dry basis)
Lactoferrin, %	1.0 min	1.3	HPLC (IX, dry basis)
Transferrin, mg/g	3.0 min	3.3	HPLC (IX, dry basis)
Lactoperoxidase-thiocyanate, %	0.5 min	0.55	HPLC (IX, dry basis)
Proline-Rich Polypeptides (PRPs), %	4.0 min	4.2	HPLC (IX, dry basis)
Insulin Growth Factor (Type 1), µg/g	1.0 min	1.5	ELISA (dry basis)
Insulin Growth Factor (Type 2), ng/g	120 min	150	ELISA (dry basis)
Derived Platelet Growth Factor, ng/g	4.0 min	4.5	HPLC (dry basis)
Epidermal Growth Factor, µg/g	1.0 min	1.2	ELISA (dry basis)
Fibroblast Platelet Growth Factor, ng/g	4.0 min	5.6	ELISA (dry basis)
Transforming Growth Factor $\alpha$ , mcg/100g	1.8 min	2.1	ELISA (dry basis)
Transforming Growth Factor $\beta$ , mcg/100g	0.01 min	0.02	ELISA (dry basis)
Nerve Growth Factor, ng/g	10.0 min	11.5	ELISA (dry basis)
Leptin, ng/g	40.0 min	52.0	ELISA (dry basis)

### Vitamin Analysis

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Vitamin A, µg/g	10.0 min	14.0	AOAC985.30 18th Ed., page 50.1.01
Vitamin B1, µg/g	40.0 min	43.2	AOAC986.27 18th Ed., page 50.1.08
Vitamin B2, µg/g	15.0 min	15.9	AOAC985.31 18th Ed., page 50.1.07
Vitamin B5, µg/g	0.7 min	0.75	AOAC992.07 18th Ed., page 50.1.22
Vitamin B6, µg/g	7.0 min	9.0	AOAC985.32 18th Ed., page 50.1.18
Vitamin B12, µg/g	0.05 min	0.1	AOAC 986.23 18th Ed., pg 50.1.20
Vitamin C, µg/g	0.20 min	0.4	AOAC985.33 18th Ed., page 50.1.09
Vitamin E, µg/g	0.18 min	0.30	AOAC992.03 18th Ed., page 50.1.04
Folic Acid, µg/g	1.0 min	2.70	AOAC992.05 18th Ed., page 50.1.21



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### Analytical Analysis

		<u>Specification</u>	<u>Typical</u>	<u>Method</u>
Moisture, %	<	5.0	3.8	AOAC 934.01/4.103 16th Ed.(102F, 3 hours)
Ash, %	<	9.0	6.9	AOAC 945.46 18th Ed., pg 33.2.10.
Total Fat, %	<	24.0	23.1	AOAC 989.04 18th Ed., pg 33.2.27
Trans Fat, %	<	1.0	Not Detected	AOAC 989.04 18th Ed., pg 33.2.27
Cholesterol, %	<	0.1	0.04	AOAC 994.10 18 <sup>th</sup> Ed., pg 45.4.10
Caloric, cal/g	<	10	5	FDA CFR Method
Lactose, %	<	20.0	16.1	By difference
Dietary Fiber, %	<	1.0	Not Detected	AOAC 991.43 18 <sup>th</sup> Ed., pg 32.1.17
Scorched Particle Disc		B	A	AOAC 952.21 18th Ed., pg 16.3.01
Insolubility Index, %	<	0.25	0.19	GEA Niro method No. A 3 a
pH	<>	6.0 - 7.0	6.2	10% sol., 20°C

### Microbiological Analysis

Aerobic Plate Count, CFU/g	<	10,000	5,000	AOAC 986.33 18th Ed., pg 17.3.02
E. Coli, CFU/g		Negative	Negative	AOAC 991.14 18th Ed., pg 17.3.04
Coliform, CFU/g	<	50	Negative	AOAC 986.33 18th Ed., pg 17.3.02
Yeast/Mold, CFU/g	<	50	Negative	AOAC 997.02 18th Ed., pg 17.2.09
Listeria, CFU/g		Negative	Negative	BAX Q7 PCR Method
Salmonella, CFU/g		Negative	Negative	BAX Q7 PCR Method
Enterobacteriaceae, CFU/g	<	50	Negative	AOAC 2003.01 18th Ed., pg 17.3.10
Bacillus Cereus, CFU/g		Negative	Negative	AOAC 980.31 18th Ed., pg 17.8.01
Enterococcus Sakasakii, CFU/g		Negative	Negative	BAX Q7 PCR Method
Shigella, CFU/g		Negative	Negative	BAX Q7 PCR Method
Streptococcus hemolyticus, CFU/g		Negative	Negative	AOAC 940.37 18th Ed., pg 17.1.03
Staph. Aureus, CFU/g		Negative	Negative	AOAC 2001.05 18th Ed., pg 17.5.07

### Essential Amino Analysis (w/w GC/MS)

Isoleucine	1.46%
Leucine	2.37%
Histidine	1.46%
Methionine	4.08%
Lysine	4.18%
Threonine	4.03%
Phenylalanine	2.42%
Valine	2.16%
Tryptophan	1.17%

### Non Essential Amino Acid Analysis (w/w GC/MS)

Arginine	2.30%
Cystine	1.12%
Glutamic Acid	9.13%
Alanine	2.50%
Tyrosine	4.96%
Glycine	1.77%
Proline	5.12%
Aspartic Acid	5.57%
Serine	4.77%

### Vitamin and Mineral Analysis

Calcium, mg/100g	>	500	966	AOAC 984.27 18th Ed., pg 50.1.15
Magnesium, mg/100g	>	100	152	AOAC 984.27 18th Ed., pg 50.1.15
Zinc, mg/100g	>	3	6	AOAC 984.27 18th Ed., pg 50.1.15
Sodium, mg/100g	>	400	598	AOAC 984.27 18th Ed., pg 50.1.15
Potassium, mg/100g	>	900	1320	AOAC 984.27 18th Ed., pg 50.1.15
Phosphorus, mg/100g	>	500	870	AOAC 984.27 18th Ed., pg 50.1.15
Iron, mg/100g	>	0.2	0.5	AOAC 984.27 18th Ed., pg 50.1.15



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Other Contaminants

		<u>Specification</u>	<u>Typical</u>	<u>Method</u>
Nitrite (NaNO <sub>2</sub> ), ppm	<	2	0.5	AOAC 951.03 18th Ed., pg 32.1.30
Nitrate (NaNO <sub>3</sub> ), ppm	<	80	10	AOAC 951.03 18th Ed., pg 32.1.30
Inhibitory Substances, ppb	<	5	Negative	CHARM SL M-a-85
Aflatoxin M1, ppb	<	0.25	Negative	AOAC 974.17 18th Ed., pg 49.3.01
Nitrofurans (AMAZ), ppb	<	0.3	Negative	Charm II 6600 (operating manual)
Nitrofurans (AOZ), ppb	<	0.3	Negative	Charm II 6600 (operating manual)
Dioxins, pg/g	<	3	Not detected	AOAC 968.23 18th Ed., pg 41.1.59
Dioxins and Dioxin-like PCBs, pg/g	<	4.5	Not detected	AOAC 984.21 18th Ed., pg 10.2.02
Melamine, ppm	<	2	Negative	FDA GCMS-MS
Titratable Acidity, %	<	0.45	0.2	GEA Niro method No. A 19 a

Heavy Metals

Arsenic, ppm	<	0.5	0.03	AOAC 986.15 18th Ed., page 9.1.01
Lead, ppm	<	0.02	0.018	AOAC 986.15 18th Ed., page 9.1.01
Mercury, ppm	<	0.1	0.01	AOAC 952.14 18th Ed., page 9.2.25
Cadmium, ppm	<	0.25	0.02	AOAC 986.15 18th Ed., page 9.1.01
Chromium, ppm	<	0.4	Not detected	AOAC 974.27 18th Ed., page 11.1.26
Copper, ppm	<	10	3	AOAC 999.10 18th Ed., page 9.1.0

Physical Properties

Appearance		Milk yellow powder	Pass	Visual
Odor		Creamy	Pass	Organoleptic
Taste		Characteristic	Pass	Organoleptic
Solubility		Good	Pass	Visual
Tapped Bulk Density, g/mL	>	0.3	0.31	In-house
Rough Pour Density, g/mL	>	0.25	0.27	In-house

Other Minor Components not quantified

Beta 2- microglobulin, Enzymes, Haemopexin, Haptoglobin, Orotic Acid, Peroxidase, Xanthine Oxidase Enzyme, Gonadotropin-Releasing Hormone (GnRH), Prolactin, Insulin, Sulfur, Glycoproteins: - (Including Protease and Trypsin Inhibitors), Lactalbumin, Multimeric  $\alpha$ -Lactalbumin, Cytokines, Lysozymes, Gamma Globulin, B Lactoglobulin, Complement 3 & 4 (C3 & C4), Kappa Casein, Alpha 2-AP glycoprotein, Alpha 1- antitrypsin, Alpha 2- macroglobulin, Orosomucoids, Prealbumin, Albumin, Oligosaccharides, Non Specific Inhibitors (NSI's), Secretory IgA (SigA), IgA Specific Helper

Packaging, Shipping and Storage

APS45-18F powder is packaged in color labeled bleached double walled corrugated boxes with a polyethylene liner. The box is 20.0 in. x 15.5in. x 14.5 in.. Each box holds 20 kg net. There are 24 boxes per pallet. Colostrum proteins are hygroscopic and can absorb odors. Temperatures below 75 degrees F, relative humidity's below 65% and an odor free environment will extend storage life. Stocks should be used in rotation and preferably within three years.

\* Where not specified results are reported on "as is" basis.