

APS-20

Description and Suggested Applications

APS-20 (SYMBIOTICS) is a pasteurized reduced fat, colostrum powder produced from colostrum collected only from milkings within 16 hours after birth.

APS-20 (SYMBIOTICS) is processed both at low pressures and temperatures and is spray dried using indirect steam to maintain maximum bio-activity. The colostrum used to produce APS-20 is from antibiotic free sources.

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

Major Active Component Analysis

	<u>Specification</u>	<u>Typical</u>	<u>Method</u>
Protein % (Nx6.38) db	50.0 min	65.5	Kheldal
Total Immunoglobulins %	24.0 min	27.0	HPLC (dry basis)
Immunoglobulins (Type G1 & G2) %	20.0 min	22.0	HPLC (dry basis)
Immunoglobulins (Type A) %	2.5 min	3.39	HPLC (dry basis)
Immunoglobulins (Type M) %	1.25 min	1.82	HPLC (dry basis)
Immunoglobulins (Type D) %	0.20 min	0.23	HPLC (dry basis)
Immunoglobulins (Type E) %	0.15 min	0.21	HPLC (dry basis)
Lactoferrin %	0.5 min	1.75	HPLC (dry basis)
Transferrin (mg/g)	3.0 min	5.85	HPLC (dry basis)
Lactoperoxidase-thiocyanate %	0.5 min	0.6	HPLC (dry basis)
Proline-Rich Polypeptides (PRPs) %	3.0 min	4.6	HPLC (dry basis)
Insulin Growth Factor (Type 1) µg/g	2.5 min	3.25	ELISA (dry basis)
Insulin Growth Factor (Type 2) ng/g	150 min	225	ELISA (dry basis)
Derived Platelet Growth Factor ng/g	4.0 min	6.50	HPLC (dry basis)
Epidermal Growth Factor µg/g	1.0 min	1.28	ELISA (dry basis)
Fibroblast Platelet Growth Factor ng/g	5.0 min	8.20	ELISA (dry basis)
Transforming Growth Factor Alpha ng/g	20.0 min	25.6	ELISA (dry basis)
Transforming Growth Factor Beta mg/g	0.20 min	0.26	ELISA (dry basis)
Nerve Growth Factor ng/g	10.0 min	13.6	ELISA (dry basis)
Leptin ng/g	40.0 min	52.0	ELISA (dry basis)

Vitamin Analysis*

Vitamin B6 µg/g	15.0 min	19.0	Mass spec. (wet basis)
Vitamin B12 µg/g	0.15 min	0.20	Mass spec. (wet basis)
Vitamin E µg/g	0.18 min	0.30	Mass spec. (wet basis)
Vitamin A µg/g	20.0 min	24.0	Mass spec. (wet basis)
Vitamin C µg/g	0.25 min	0.45	Mass spec. (wet basis)
Thiamin (Vitamin B1) µg/g	150.0 min	180	Mass spec. (wet basis)
Folic Acid µg/g	2.0 min	2.75	Mass spec. (wet basis)
Pantothenic Acid µg/g	2.0 min	2.75	Mass spec. (wet basis)
Riboflavin (Vitamin B2) µg/g	50.0 min	75.0	Mass spec. (wet basis)
Beta-carotene µg/g	200 min	260	Mass spec. (wet basis)
Glycoconjugates µg/g	3.0 min	3.20	Mass spec. (wet basis)
Glycogen µg/g	50.0 min	64.0	Mass spec. (wet basis)
Retinoic Acid µg/g	10.0 min	12.0	Mass spec. (wet basis)

Analytical and Microbiological Analysis*

Moisture %	5.0 max	4.5	CEM
Protein % (Nx6.38) db	50.0 min	65.5	Kheldal
Ash %	9.0 max	9.0	Mass Spec.
Fat %	5.0 max	4.0	Mojonnier
Lactose %	15.0 max	13.0	by difference
Sediment	B	A	Pad
pH	6.5 < 7.5	7.0	10% sol., 20C
Bulk density	0.25 < 0.35	0.32	grams / cc
Standard Plate Count (col/g)	30,000 max	5,000	Standard**
Yeast and Mold (col/g)	10 max	<10	Standard**
Coliform (col/g)	10 max.	<10	3M Petrifilm
E.Coli (col/g)	10 max.	<1	3M Petrifilm
Salmonella sp.	Neg. / 200g	Neg.	ELISA
Listeria sp.	Neg. / 25g	Neg.	ELISA

Essential Amino Acid Analysis* (weight/weight basis)(GC/MS)
Non Essential Amino Acid Analysis*(w/w) (GC/MS)

Isoleucine	1.46%	Arginine	2.30%
Leucine	2.37%	Cystine	1.12%
Histidine	1.46%	Glutamic Acid	9.13%
Methionine	4.08%	Alanine	2.50%
Lysine	4.18%	Tyrosine	4.96%
Threonine	4.03%	Glycine	1.77%
Phenylalanine	2.42%	Proline	5.12%
Valine	2.16%	Aspartic Acid	5.57%
Tryptophan	1.17%	Serine	4.77%

Other Minor Components not Quantified

Beta 2- microglobulin, Enzymes, Haemopexin, Haptoglobulin, Orotic Acid, Peroxidase, Xanthine Oxidase Enzyme, Gonadotropin-Releasing Hormone (GnRH), Prolactin, Insulin, Sulfur, Glycoproteins: - (Including Protease and Trypsin Inhibitors), Lactalbumin, Multimeric a-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

Mineral Analysis* and Physical Properties

	Specification <u>mg/100gm</u>	Typical <u>mg/100gm</u>		
Sodium	150 < 300	250	Solubility:	Good
Calcium	250 < 500	350	Color:	Soft yellow
Phosphorus	250 < 400	300	Flavor:	Clean & Bland
Potassium	450 < 750	500	Odor:	Clean
Magnesium	30 < 60	50	Appearance:	Free flowing
Chromium	30 < 60	50	Appearance:	Free flowing
Zinc	30 < 60	50	Appearance:	Free flowing
Chloride	< 200	50		& non-caking

* Where not specified results are reported on " as is" basis except. ** Standard Methods for Examination of Dairy Products, 16th Edition 6/30/04