



The AQUANAL laboratory is an active member in the validation of reference methods for infant formulas and formulas for special medical purposes (ADDFMS).

Our analytical expertise in infant formula and ADDFMS

Because infants, young children and malnourished patients are vulnerable and have specific needs, **infant formulas and ADDFMS are subject to extremely strict regulations.**

To meet the requirements of these regulations, the analytical methods used to determine the essential nutrient content of these very special matrices must ensure that their nutrient content (vitamins, minerals, trace elements, etc.) complies with the content declared on the nutrition label.

To help infant formula manufacturers and control laboratories verify the conformity of these products, analytical methods have been specially developed as part of the **SPIFAN** (Stakeholder Panel on Infant Formula and Adult Nutritional Products) project.

Led by **AOAC INTERNATIONAL** and in collaboration with **ISO** and **IDF**, which began in 2010 and has resulted in the publication of **AOAC** methods, followed by **ISO international standards**.

These **ISO** methods, adapted to the control of infant formula and adult nutritional products, enable a more accurate determination of their nutritional composition. This international harmonization (Codex Alimentarius* - Type II = reference methods) avoids disputes arising from the use of different methods by different parties.

When **SPIFAN** called on laboratories to carry out the interlaboratory tests required to draw up these standards, **AQUANAL** was immediately involved, as it has always been for the standardization of methods. Aqualan's expertise and skills enable it to offer its customers methods adapted to the control of infant formulas and ADDFMS*.



*The Codex Alimentarius was established by the FAO and the World Health Organization (WHO) in 1963 to develop harmonized international food standards to protect the health of consumers and promote fair practices in the food trade. **INFANT FORMULAS & ADULT NUTRITIONAL PRODUCTS** Because infants, young children and malnourished patients are fragile and have specific needs, infant formulas and ADDFMS are subject to extremely stringent regulations.

Specific methods for infant formulas and nutritional products for adults

Vitamin B1 / Thiamine	★	ISO 21470 / LC-MS-MS	(AOAC 2015.14)
Vitamin B2 / Riboflavine	★	ISO 21470 / LC-MS-MS	(AOAC 2015.14)
Vitamin PP ou B3 / Niacine	★	ISO 21470 / LC-MS-MS	(AOAC 2015.14)
Vitamin D2 / Ergocalciférol	★	ISO 20636 / LC-MS-MS	(AOAC 2016.05)
Vitamin D3 / Cholécalficérol	★	ISO 20636 / LC-MS-MS	(AOAC 2016.05)
Vitamin B5 / Acide Pantothénique	★	ISO 20639 / LC-MS-MS	(AOAC 2012.16)
Vitamin B6 / Pyridoxine	★	ISO 21470 / LC-MS-MS	(AOAC 2015.14)
Total vitamin B9 / Acide folique	★	ISO 20631 / LC-MS-MS	(AOAC 2011.06)
Vitamin C / Acide Ascorbique	★	ISO 20635 / HPLC	(AOAC 2012.22)
Total choline	★	ISO 21468 / LC-MS-MS	(AOAC 2015.10)
Total carnitine	★	ISO 21468 / LC-MS-MS	(AOAC 2015.10)
Fructans (inuline, fructooligosaccharides - FOS)	★	ISO 22579 / HPAEC-PAD	(AOAC 2016.14)
Inositol (free myo-inositol)	★	ISO 20637 / HPAEC-PAD	(AOAC 2011.18)
Nucleotides (AMP - CMP - IMP - UMP)	★	ISO 20638 / HPAEC-PAD	

Other determinations (non-exhaustive list, see catalog for full range of services)

Taurine	★	Internal method / HPLC	
Complete amino acid profile (including Tryptophane)	★	Internal method / HPLC	
Fat extraction	★	Hot by in-house method	
	★	Cold according to V03-030	
Fatty acid profile (including saturated, monounsaturated, polyunsaturated, Omega 3, Omega 6, EPA, DHA, ARA and trans fatty acids)	★		
Galactooligosaccharides (GOS)		Internal method / HPAEC-PAD	
Cholesterol		NF EN 12228 / CPG	
Lead	★	NF EN 13805 - NF EN 15763 / ICP-MS	
Mercury	★	NF EN 13805 - NF EN 15763 / ICP-MS	
Cadmium	★	NF EN 13805 - NF EN 15763 / ICP-MS	
Arsenic	★	NF EN 13805 - NF EN 15763 / ICP-MS	
Aflatoxin M1	★	Internal method / LC-MS-MS	
Melamine et cyanuric acid		NF EN 16858 / LC-MS-MS	
Nitrates / Nitrites	★	NF EN ISO 14673-2 / Segmented continuous flow	
Chlorate / Perchlorate		Internal method / LC-MS-MS	



★ Analysis under Cofrac accreditation n°1-0703 "Scope available" on www.cofrac.fr

Internationally recognized expertise / Participation in Interlaboratory Tests for the validation of numerous AOAC methods (ISO standards) - INFANT FORMULA AND ADULT NUTRITIONALS.

- HPLC Determination of Total **Tryptophan** in Infant Formula and Adult/Pediatric Nutritional Formula Following Enzymatic Hydrolysis, Multilaboratory Testing Study : Final Action 2017.03
- Analysis of **Vitamin D2** and **Vitamin D3** in Infant and Adult Nutritional Formulas by Liquid Chromatography-Tandem Mass Spectrometry : Multilaboratory Testing Study, First Action 2016.05
- Determination of **Fructans** in Infant Formula and Adult/Pediatric Nutritional Formula by Anion-Exchange Chromatography with Pulsed Amperometric Detection after Enzymatic Treatment : Collaborative Study, Final Action 2016.14
- Determination of Total **Biotin** by Liquid Chromatography Coupled with Immunoaffinity Column Cleanup Extraction : Multilaboratory Testing, Final Action 2016.02
- Simultaneous Determination of Total **Vitamins B1, B2, B3** and **B6** in Infant Formula and Related Nutritionals by Enzymatic Digestion and LC-MS/MS - A Multi-Laboratory Testing Study, Final Action : AOAC Method 2015.14
- Determination of Free and Total **Choline** and Free and Total **Carnitine** in Infant Formula and Adult/Pediatric Nutritional Formula by Liquid Chromatography/Tandem Mass Spectrometry (HPLC-MS/MS) : A Multi-laboratory Testing Study, Final Action 2015.10
- Determination of trans and Total **Vitamin K1** in Infant, Pediatric and Adult Nutritionals by HPLC with Post Column Reduction and Fluorescence Detection : Multilaboratory Testing Study, AOAC Final Action 2015.09
- **Minerals** and **Trace Elements** in Milk, Milk Products, Infant Formula, and Adult/Pediatric Nutritional Formula, ICP-MS Method : Collaborative Study, AOAC Final Action 2015.06
- **Vitamin B12** (Cyanocobalamin) in Infant Formula Adult/Pediatric Nutritional Formula by Liquid Chromatography with Ultraviolet Detection : Collaborative study, Final Action 2014.02
- **Vitamin C** in Infant Formula and Adult/Pediatric Nutritional Formula by Liquid Chromatography with UV Detection : Collaborative Study, Final Action 2012.22
- Pantothenic Acid (**Vitamin B5**) in Infant Formula and Adult/Pediatric Nutritional Formula by Ultra-High Pressure Liquid Chromatography/Tandem Mass Spectrometry Method : Collaborative Study, Final Action 2012.16
- Determination of **Chromium, Selenium, and Molybdenum** in Infant Formula and Adult Nutritional Products by Inductively Coupled Plasma/Mass Spectrometry : Collaborative Study, Final Action 2011.19
- Determination of **Myo-Inositol** in Infant, Pediatric, and Adult Formulas by Liquid Chromatography - Pulsed Amperometric Detection with Column Switching : Collaborative Study, Final Action 2011.18
- Determination of **Vitamin B12** in Infant, Adult, and Pediatric Formulas by HPLC-UV and Column Switching : Collaborative Study, Final Action 2011.10
- Total **Folate** in Infant Formula and Adult Nutritionals by Trienzyme Extraction and LC-MS/MS Quantitation : A Multilaboratory Testing Study, Final Action 2011.06