



**Bureau of Laboratory Quality Standards
Ministry of Public Health**

This is to certify that

The laboratory of

Betagro Science Center Co., Ltd. (Lop Buri)

219 Moo 1, Chongsarika , Patthana Nikhom,

Lop Buri 15220, Thailand

has been accepted as an

accredited laboratory complying with the ISO/IEC 17025 : 2017
and the requirements of the Bureau of Laboratory Quality Standards

The laboratory has been accredited for specific tests

listed in the scope within the field of

Food and Feeding stuffs Testing

(Dr. Patravee Soisangwan)

Director of Bureau of Laboratory Quality Standards

Date of Accreditation : 24 December 2021

Valid Until : 23 December 2025

Accreditation Number 1046/47



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The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

No.	Type of Sample	Test	Method
1	- Meat and meat products - Poultry neck skin (Fresh, Chilled, Frozen, Processed)	1. <i>Campylobacter</i> spp. (CFU)	ISO 10272-2 :2017
		2. <i>Clostridium perfringens</i> (CFU/Detected or not detected)	FDA BAM <i>Online</i> , 2001 (Chapter 16)
		3. Coliforms (MPN) 4. <i>E.coli</i> (MPN/Detected or not detected) 5. Fecal Coliforms (MPN)	FDA BAM <i>Online</i> , 2020 (Chapter 4)
		6. <i>Listeria</i> spp. Including identify species (Detected or not detected)	-ISO 11290-1: 2017
			-AFNOR Certificate No.BIO 12/02-06/94
		7. <i>Listeria monocytogenes</i> (Detected or not detected)	-ISO 11290-1: 2017
			- AFNOR Certificate No.BIO-12/11-03/04
		8. <i>Staphylococcus aureus</i> (CFU)	AOAC (2019) 2003.11

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No.	Type of Sample	Test	Method
1	- Meat and meat products - Poultry neck skin (Fresh, Chilled, Frozen, Processed)	9. Yeasts (CFU) 10. Molds (CFU) 11. Yeasts and Molds (CFU)	ISO 21527-1: 2008 ISO 21527-2: 2008
2	-Meat and Animal Organ (Fresh, Chilled, Frozen) -Egg	12. Detection of Anti – Bacterial substance residues (Screening test) (Detected or not detected)	In-house method TI-B00-017 by six –plate agar diffusion assay
3	- Meat and meat products - Fishery and fishery products (Fresh, Chilled, Frozen, Process)	13. <i>Pseudomonas</i> spp. (CFU)	-ISO 13720: 2010 (Presumptive) -In-house method TI-B00-053 based on cowan and steel’s manual for the identification of medical bacteria third edition edited and revised by G. I. BARROW and R. K. A. FELTHAM (Biochemical test)
4	-Meat and meat products -Fishery and fishery products (Fresh, Chilled, Frozen, Processed) - Ready-to-Cook Foods - Ready-to-Eat Foods	14. <i>Clostridium</i> spp. (CFU) 15. Anaerobic Sulfite-reducing bacteria (CFU)	ISO 15213:2003

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No.	Type of Sample	Test	Method
5	Ready-to-Eat Foods	16. <i>Staphylococcus aureus</i> (CFU)	AOAC (2019) 2003.07
6	-Meat and meat products -Fishery and fishery products -Egg and egg products (Fresh, Chilled, Frozen, Processed) -Ready-to-Eat Foods -Ready-to-Cook Foods -Semi processed Food	17. Enterococci (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th Edition, 2015 (Chapter 10)
7	-Meat and meat products -Fishery and fishery products -Egg and egg products (Fresh, Chilled, Frozen, Processed) -Ready-to-Cook Foods -Ready-to-Eat Foods - Semi processed Food - Vegetable and vegetable products - Fruit and fruit products	18. Enterococci (CFU)	NordVal Certificate No.047
		19. Total Viable Count 30 °C (CFU)	-ISO 4833-1:2013 -AFNOR Certificate No. 3M 01/01 - 09/89
		20. Total Viable Count 35 °C (CFU)	AOAC RI Certificate No. 010404
		21. <i>Bacillus cereus</i> (CFU)	FDA BAM <i>Online</i> , 2020 (chapter 14)

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No.	Type of Sample	Test	Method
7	-Meat and meat products	22. <i>Campylobacter</i> spp. including identify species (Detected or not detected)	-ISO 10272-1:2017
	-Fishery and fishery products	23. <i>Campylobacter jejuni</i> (Detected or not detected)	-AFNOR Certificate No. BIO12/29-05/10
	-Egg and egg products (Fresh, Chilled, Frozen, Processed)	24. <i>Campylobacter coli</i> (Detected or not detected)	
	-Ready-to-Cook Foods -Ready-to-Eat Foods - Semi processed Food - Vegetable and vegetable products	25. <i>E. coli</i> O157 (Detected or not detected)	- AOAC RI Certificate No.070801; (Including H7)
- Fruit and fruit products	26. <i>E.coli</i> O157 H:7 (Detected or not detected)	- In-house method TI-B00-055 based on FDA BAM <i>Online</i> , 2020 (Chapter 4A) (Biochemical test)	
	27. <i>Vibrio parahaemolyticus</i> (MPN)	FDA BAM <i>Online</i> , 2004 (Chapter 9)	

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No.	Type of Sample	Test	Method
8	Milk and milk products	28. Coliforms (CFU, MPN) 29. <i>E.coli</i> (CFU, MPN)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 9)
		30. Enterobacteriaceae (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th Edition, 2015 (Chapter 9)
		31. <i>Salmonella</i> spp. (Detected or not detected)	-ISO 6579-1:2017/Amd.1:2020 (E) -AFNOR Certificate No. BIO 12/16-09/05
		32. <i>Staphylococcus aureus</i> (CFU)	-ISO 6888-1:2021(Coagulase-positive staphylococci) -FDA BAM <i>Online</i> , 2016 (Chapter 12) (Biochemical test) -NordVal Certificate No.042
		33. <i>Staphylococcus aureus</i> (Detected or not detected)	-ISO 6888-3:2003(Coagulase-positive staphylococci) -FDA BAM <i>Online</i> , 2016 (Chapter 12) (Biochemical test)
		34. Staphylococcal Enterotoxin (Detected or not detected)	AOAC (2019) 2007.06

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No.	Type of Sample	Test	Method
8	Milk and milk products	35. Total Viable Count 35 °C (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 8)
		36. Coagulase-positive staphylococci (CFU)	-AFNOR Certificate No.3M 01/09 - 04/03 A and AFNOR Certificate No.3M 01/09 -04/03 B
			-ISO 6888-1:2021
		37. Coagulase-positive staphylococci (Detected or not detected)	ISO 6888-3: 2003
		38. Total Viable Count 30°C (CFU)	AFNOR Certificate No. 3M 01/01 -09/89
		39. Yeasts (CFU) 40. Molds (CFU) 41. Yeasts and Molds (CFU)	-Compendium of Methods for the Microbiological Examination of – Foods, (APHA), 5 th edition 2015 (Chapter 21)
-AOAC (2019) 2014.05			

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No.	Type of Sample	Test	Method
9	-Meat and meat products -Fishery and fishery products (Fresh, Chilled, Frozen, Processed) -Ready-to-Cook Foods - Ready-to-Eat Foods -Semi processed Food -Drinking in sealed container -Canned Food	42. Staphylococcal Enterotoxin (Detected or not detected)	AOAC (2019) 2007.06
10	- Meat and meat products - Fishery and fishery products	43. <i>Salmonella</i> spp. (Detected or not detected)	ISO 6579-1:2017/Amd.1:2020 (E)
	- Eggs and egg products (Fresh, Chilled, Frozen, Processed) -Ready-to-Cook Foods	44. <i>Staphylococcus aureus</i> (CFU)	-ISO 6888-1:2021 (Coagulase-positive staphylococci) -FDA BAM <i>Online</i> , 2016 (Chapter 12) (Biochemical test)
	-Ready-to-Eat Foods - Semi processed Food - Vegetable and vegetable products - Fruit and fruit products	45. <i>Staphylococcus aureus</i> (Detected or not detected)	-ISO 6888-3:2003 (Coagulase-positive staphylococci) -FDA BAM <i>Online</i> , 2016 (Chapter 12) (Biochemical test)

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No.	Type of Sample	Test	Method
10	- Nuts and nuts Product - Seeds and seeds Product - Cereal and cereal Product	46. Total Viable Count 35 °C (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 8)
	- Flour and Starches - Salts, spices, soups, sauces, salads and protein products - Fats and oils - Sweeteners*	47. Yeasts (CFU) 48. Molds (CFU) 49. Yeasts and Molds (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 21)
11	- Meat and meat products - Fishery and fishery products	50. Coliforms (CFU, MPN) 51. <i>E.coli</i> (CFU, MPN)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 9)
	- Eggs and egg products (Fresh, Chilled, Frozen, Processed)	52. Coliforms (CFU) 53. <i>E.coli</i> (CFU)	Compact Dry EC, AOAC RI Certificate No. 110402
	-Ready-to-Cook Foods -Ready-to-Eat Foods -Semi processed Food	54. Coagulase-positive staphylococci (CFU)	-AFNOR Certificate No.3M 01/09 – 04/03 A and AFNOR Certificate No.3M 01/09 -04/03 B
	-Vegetable and vegetable products - Fruit and fruit products - Flour and Starches - Nuts, seeds, Cereal and Cereal Product	56. Coagulase-positive staphylococci (Detected or not detected)	-ISO 6888-1:2021 ISO 6888-3: 2003

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No.	Type of Sample	Test	Method
11	- Meat and meat products	57. Enterobacteriaceae (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th Edition, 2015 (Chapter 9)
	- Fishery and fishery products		
	- Eggs and egg products (Fresh, Chilled, Frozen, Processed)	58. <i>Salmonella</i> spp. (Detected or not detected)	AFNOR Certificate No. BIO12/16-09/05
	- Ready-to-Cook Foods	59. <i>Staphylococcus aureus</i> (CFU)	NordVal Certificate No.042
	- Ready-to-Eat Foods		
	- Semi processed Food	60. Yeasts (CFU)	AOAC (2019) 2014.05
12	- Vegetable and vegetable products	61. Molds (CFU)	
	- Fruit and fruit products	62. Yeasts and Molds (CFU)	
	- Flour and Starches	63. <i>Vibrio parahaemolyticus</i>	ISO21872-1:2017
	- Nuts, seeds, cereal and nuts, seeds, cereal product	64. <i>Vibrio cholerae</i> (Detected or not detected)	
	- Sweeteners*	65. Coliforms (MPN)	FDA BAM <i>Online</i> , 2020 (Chapter 4)
	- Fats and oils	66. <i>E.coli</i> (MPN/Detected or not detected)	
	- Salts, spices, soups, sauces, salads and protein products	67. Fecal Coliforms (MPN)	

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No.	Type of Sample	Test	Method
13	Salts, spices, soups, sauces, salads and protein products	68. <i>Clostridium perfringens</i> (CFU/Detected or not detected)	FDA BAM <i>Online</i> , 2001 (Chapter 16)
		69. <i>Listeria monocytogenes</i> (Detected or not detected)	AFNOR Certificate No.BIO-12/11-03/04
14	<ul style="list-style-type: none"> ● Potable water <ul style="list-style-type: none"> - Drinking water - Drinking water in sealed container - Water to be used in food production process ● Non-Potable water <ul style="list-style-type: none"> -Natural water -Ground water -Surface water - Aquaculture water - Water supply - Tap water - Water to be used in the factory - Brackish water 	70. <i>Clostridium perfringens</i> (CFU/ Detected or not detected)	-In-house method TI-B00-027 based on FDA BAM <i>Online</i> , 2001 (Chapter 16)
		71. Coliforms (MPN)	-ISO14189:2013
		72. <i>E.coli</i> (MPN, Detected or not detected)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017. Part 9221B, 9221E, 9221F
		73. Thermotolerant (Fecal) Coliforms	
		74. <i>Listeria monocytogenes</i> (Detected or not detected)	AFNOR Certificate No.BIO-12/11-03/04
		75. <i>Listeria</i> spp. (Detected or not detected)	- AFNOR Certificate No. UNI 03/09 – 11/13 - AFNOR Certificate No.: BIO 12/39-09/16
		76. <i>Salmonella</i> spp. (Detected or not detected)	ISO 19250 : 2010

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No.	Type of Sample	Test	Method
14	<ul style="list-style-type: none"> - Distilled Water - DI water (Deionized water) - RO water - Soft water ● Ice ● Mineral water 	77. Enterococci (CFU)	-Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017. Part 9230C
			-NordVal Certificate No.047
		78. <i>Salmonella spp.</i> (Detected or not detected)	Rapid Finder Salmonella species , Typhimurium and Enteritidis Multiplex
		79. <i>Salmonella Enteritidis</i> (Detected or not detected)	PCR kits for Detection of Salmonella Certificate number : UNI03/12-01/18
		80. <i>Salmonella Typhimurium</i> (Detected or not detected)	
		81. <i>Staphylococcus aureus</i> (CFU/Detected or not detected)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017. Part 9213B
		82. Total Viable Count at 22°C and 36 °C (CFU)	-ISO 6222:1999 -In-house method TI-B00-078 based on ISO 6222:1999
83. Heterotrophic Plate Count at 35 °C (CFU)	In-house method TI-B00-078 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF. 23 nd Edition, 2017. Part 9215, 9215 B		

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No.	Type of Sample	Test	Method
15	- Animal Carcass - Environmental Samples from Food Production • Swab Test	84. Coliforms (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 9)
		85. <i>E.coli</i> (CFU)	
		86. Enterococci (CFU)	NordVal Certificate No.047
		87. Enterobacteriaceae (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 9)
		88. <i>Salmonella</i> spp. (Detected or not detected)	-AFNOR Certificate No. BIO 12/16-09/05
			-ISO 6579-1:2017/Amd.1:2020 (E)
		89. Total Viable Count 35 °C (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA), 5 th edition 2015 (Chapter 8)
		90. Yeasts (CFU) 91. Molds (CFU) 92. Yeasts and Molds (CFU)	Compendium of Methods for the Microbiological Examination of Foods, (APHA) , 5 th edition 2015 (Chapter 21)
93. <i>Staphylococcus aureus</i> (Detected or not detected)	-ISO 6888-3:2003(Coagulase-positive staphylococci) -FDA BAM Online, 2016 (Chapter 12) (Biochemical test)		

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No.	Type of Sample	Test	Method
15	- Animal Carcass - Environmental Samples from Food Production Swab Test	94. <i>Staphylococcus aureus</i> (CFU)	NordVal Certificate No.042
			-ISO 6888-1:2021(Coagulase-positive staphylococci) -FDA BAM Online, 2016 (Chapter 12) (Biochemical test)
16	Animal Carcass	95. <i>Campylobacter</i> spp. (CFU)	ISO 10272-2 :2017
17	Environmental Samples from Food Production ● Swab Test	96. <i>Listeria</i> spp. Including identify species (Detected or not detected)	AFNOR Certificate No BIO-12/33-05/12
		97. <i>Vibrio parahaemolyticus</i> (Detected or not detected)	ISO 21872-1:2017
		98. <i>Vibrio cholerae</i> (Detected or not detected)	
		99. <i>Pseudomonas</i> spp. (CFU)	-ISO 13720: 2010 (Presumptive) -In-house method TI-B00-053 based on cowan and steel's manual for the identification of medical bacteria third edition edited and revised by G. I. BARROW and R. K. A. FELTHAM (Biochem test)

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No.	Type of Sample	Test	Method
18	- Food ** - Animal Carcass	100. Fecal coliforms (MPN)	Compendium of Methods for the Microbiological Examination of Foods, (APHA) , 5 th edition 2015 (Chapter 9).
19.	- Food ** - Animal Carcass - Environmental Samples from Food Production ● Swab Test	101. <i>Listeria monocytogenes</i> (Detected or not detected)	AFNOR Certificate No.BIO-12/11-03/04
		102. <i>Listeria</i> spp. (Detected or not detected)	- AFNOR Certificate No. UNI 03/09 – 11/13 - AFNOR Certificate No.: BIO 12/39-09/16
		103. <i>Salmonella</i> spp. (Detected or not detected)	- AFNOR Certificate number : UNI 03/07 – 11/13 - AFNOR Certificate number : BIO 12/38 – 06/16
20	- Meat and meat products - Animal Carcass - Environmental Samples from Food Production ● Swab Test	104. <i>Salmonella</i> spp. (Detected or not detected)	Rapid Finder Salmonella species, Typhimurium and Enteritidis Multiplex PCR kit for Detection of Salmonella Certificate number : UNI 03/12 – 01/18
		105. <i>Salmonella Enteritidis</i> (Detected or not detected)	
		106. <i>Salmonella Typhimurium</i> (Detected or not detected)	

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No.	Type of Sample	Test	Method
		detected)	
21	- Meat and meat products - Animal Carcass	107. <i>Salmonella</i> spp. (MPN)	ISO 6579-2:2012
22	- Meat and meat products - Fishery and fishery products - Seafood and seafood products - Egg and egg products (Fresh, Chilled, Frozen, Processed) - Ready-to-Cook Foods - Ready-to-Eat Foods - Semi processed Foods - Canned Food	108. Moisture	AOAC (2019) 950.46
		109. Ash	AOAC (2019) 920.153
23	Flour and flour product	110. Moisture	AOAC (2019) 925.10
		111. Ash	AOAC (2019) 923.03
24	Cereal and cereal product	112. Moisture	AOAC (2019) 945.39
		113. Ash	AOAC (2019) 923.03
25	Meat and meat products (Fresh, Chilled, Frozen, Process)	114. Crude Protein 115. Nitrogen	In-house method TI-C00-088 based on AOAC (2019) 981.10

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No.	Type of Sample	Test	Method
26	<ul style="list-style-type: none"> - Fishery and fishery products - Seafood and seafood products - Egg and Egg products (Fresh, Chilled, Frozen, Processed) - Ready-to-Cook Foods - Ready-to-Eat Foods - Semi processed Foods - Canned Food - Cereal and Cereal Products - Flour and Flour Products 	<ul style="list-style-type: none"> 116. Crude Protein 117. Nitrogen 	In- house method TI-C00-016 based on ISO 5983-2 :2009
27	<ul style="list-style-type: none"> - Meat and meat products - Fishery and fishery products - Seafood and seafood products (Fresh, Chilled, Frozen, Process) - Ready-to-Eat Foods 	118. Crude Fat	In-house method TI-C00-015 based on AOAC (2019) 991.36

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No.	Type of Sample	Test	Method
	<ul style="list-style-type: none"> - Semi processed foods - Canned food - Flour and flour product - Cereal and cereal product 		
28	<ul style="list-style-type: none"> - Meat and meat products - Fishery and fishery products - Seafood and seafood products - Egg and egg products (Fresh, Chilled, Frozen, Processed) - Ready-to-Eat Foods - Cereal and cereal products 	119. Crude Fat	In-house method TI-C00-097 based on AOCS (2010) Am 5-04
29	<ul style="list-style-type: none"> - Meat and meat products - Fishery and fishery products - Seafood and seafood products - Egg and egg products (Fresh, Chilled, Frozen, Processed) 	120. Fat (Acid hydrolysis)	In-house method TI-C00-027 based on ISO 6492 : 1999

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No.	Type of Sample	Test	Method
	<ul style="list-style-type: none"> - Ready-to-Cook Foods - Ready-to-Eat Foods - Semi processed foods - Canned food - Flour and flour product - Cereal and cereal product 		
30	<ul style="list-style-type: none"> - Meat and meat products - Fishery and fishery products - Seafood and seafood products (Fresh, Chilled, Frozen, Processed) - Egg and Egg Products - Ready-to-Cook Foods - Ready-to-Eat Foods - Semi processed Foods - Canned Food - Flour and Flour Product - Cereal and Cereal Product 	121. Carbohydrate 122. Energy	Method of Analysis for Nutrition Labeling (1993) Chapter 6, Page 105-107

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No.	Type of Sample	Test	Method
31	- Meat and meat products - Fishery and fishery products - Seafood and seafood products - Egg and Egg Products (Fresh, Chilled, Frozen, Processed)	123. Phosphorus	AOAC (2019) 995.11
32	- Meat and meat products - Fishery and fishery products - Seafood and seafood products - Egg and Egg Products (Fresh, Chilled, Frozen, Processed) - Ready-to-Eat Foods -Vegetable and Their products - Fruit and fruit products - Cereal and Cereal Product - Flour and Flour Product	124. Dietary Fiber 125. Total Dietary Fiber	In- house method TI-C00-068 based on AOAC (2019) 985.29

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No.	Type of Sample	Test	Method
33	Meat and meat products (Fresh, Chilled, Frozen, Processed)	Total Amino Acid 126. Taurine (Tau) 127. Aspartic Acid (Asp) 128. Threonine (Thr) 129. Serine (Ser) 130. Glutamic Acid (Glu) 131. Proline (Pro) 132. Glycine (Gly) 133. Alanine (Ala) 134. Cystine (Cys) & Cysteine 135. Valine (Val) 136. Methionine (Met) 137. Isoleucine (Ile) 138. Leucine (Leu) 139. Tyrosine (Tyr) 140. Phenylalanine (Phe) 141. Histidine (His) 142. Lysine (Lys) 143. Arginine (Arg) 144. Hydroxy lysine 145. Hydroxy proline 146. Ornithine	In-house method TI-C00-093 based on ISO 13903: 2005

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No.	Type of Sample	Test	Method	
33	Meat and meat products (Fresh, Chilled, Frozen, Processed)	147. Methionine sulfoxide		
		148. GABA		
		149. Nitrite and Sodium Nitrite		In-house method TI-C00-119 based on BS EN12014-4 :2005
		150. Nitrate and Sodium Nitrate		
151. Sodium Chloride	In-house method TI-C00-020 based on ISO 6495:1999			
152. Chloride				
34	Fat and Oil	153. Iodine value	In-house method TI-C00-076 based on AOAC (2019) 993.20	
		154. Peroxide Value	AOCS (2017) Cd 8b-90	
		155. Acid value	ISO 660:2020 (E)	
		156. Free Fatty Acid		
		157. Acidity		
158. p-Anisidine value	AOCS (2017) Cd 18-90			
35	Animal Fat	Organochlorine: 159. aldrin 160. dieldrin 161. endrin 162. heptachlor 163. heptachlor epoxide 164. trans-chlordane 165. hexachlorobenzene	In-house method TI-C00-001 based on Journal AOAC, Vol.67, No. 2 (1984)	

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No.	Type of Sample	Test	Method
35	Animal Fat	166. alpha-BHC 167. beta-BHC 168. gamma-BHC 169. oxychlordane 170. cis-chlordane 171. 4,4'DDE 172. 2,4'DDT 173. 4,4'DDD 174. 4,4'DDT	In-house method TI-C00-001 based on Journal AOAC, Vol.67, No. 2 (1984)
36	<ul style="list-style-type: none"> ● Potable water <ul style="list-style-type: none"> - Drinking water - Drinking water in sealed container ● Non-Potable water <ul style="list-style-type: none"> - Natural water - Ground water - Surface water - Water supply - Tap water - Water to be used in the factory - Distilled Water 	175. Bromate 176. Chloride 177. Fluoride 178. Nitrate 179. Nitrite 180. Phosphate 181. Sulfate	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4110 B
		182. Anionic Surfactants as Methylene Blue Active Substances (MBAS) - MBAS, calculated as Linear Alkylbenzene Sulfonate (LAS) MW= 348.48	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5540 C

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No.	Type of Sample	Test	Method
36	- DI water (Deionized water) - RO water - Soft water ● Ice	183. Color	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2120 C
		184. Conductivity at 20 °C and 25 °C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2510 B
		185. pH at 25 °C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500- H ⁺ B
		186. Cyanide	-Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500-CN C, 4500-CN E
			- ASTM D2036-09 (2015), Standard Test Method for Cyanide in water, ASTM International, West Conshohocken, PA, 2015, Test Method A Total Cyanide after Distillation, Section 12-18
187. Phenol	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5530 B and C		

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No.	Type of Sample	Test	Method
36	<ul style="list-style-type: none"> ● Potable water - Drinking water - Drinking water in sealed container 	188. Residual free chlorine	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017 Part 4500-Cl F
		189. Odor	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017 Part 2150 B
	<ul style="list-style-type: none"> ● Non-Potable water - Natural water -Ground water -Surface water - Water supply - Tap water - Water to be used in the factory - Distilled Water - DI water (Deionized water) - RO water - Soft water ● Ice 	190. Total Dissolved Solids	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2540 C
		191. Total Hardness	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2340 C
		192. Total Solids	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2540 B
		193. Turbidity	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2130 B
		194. Carbonate Hardness	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2340 C. and 2320 B
		195. Non- Carbonate Hardness	

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No.	Type of Sample	Test	Method
37	Waste water	196. Biochemical Oxygen Demand (BOD)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5210 B. and 4500-O C
		197. Total Suspended Solids	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2540 D
		198. Chemical Oxygen Demand (COD)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5220C
		199. Total Kjeldahl Nitrogen	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500 N _{org} B, 4500-NH ₃ C
		200. Total phosphorus	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500-P B and C
		201. Formaldehyde	In-house method TI-C00-064 based on Manual of Wastewater Analysis. Environment Engineering Association Thailand, Edition, 4 th , 2004. page 183-186

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No.	Type of Sample	Test	Method
37	Waste water	202. Residual Free Chlorine	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500 ClF
		203. Oil & Grease	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5520
		204. Sulfide	Standard Methods for the Examination of Water and Waste water. APHA,AWWA, WEF,23 rd Edition,2017,Part 4500 S ²⁻ C and F
		205. Mercury	Standard Methods for the Examination of Water and Waste water. APHA,AWWA, WEF,23 rd Edition,2017, Part 3112-B
		206. Temperature	Standard Methods for the Examination of Water and Waste water. APHA,AWWA, WEF,23 rd Edition,2017 Part 2550 B
		207. Ammonia	Standard Methods for the Examination of Water and Waste water. APHA,AWWA, WEF,23 rd Edition,2017, Part 4500-NH ₃ B and C
		208. Salinity	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition,2017, Part 4110 B.

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No.	Type of Sample	Test	Method
37	Waste water	209. Alkalinity	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2320 B
		210. Carbonate Hardness 211. Non-Carbonate Hardness	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2340 C. and 2320 B
		212. Phenol	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 5530 B and D
		213. pH at 25 °C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500- H ⁺ B
		214. Total Dissolved Solids	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2540 C
		215. Chloride	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4110 B

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No.	Type of Sample	Test	Method
37	Waste water	216. Cyanide	-Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 4500-CN C, 4500-CN E
			- ASTM D2036-09 (2015), Standard Test Method for Cyanide in water, ASTM International, West Conshohocken, PA, 2015, Test Method A Total Cyanide after Distillation, Section 12-18
		217. Odor	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017 Part 2150 B
		218. Total Solids	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, WEF, 23 rd Edition, 2017, Part 2540 B
		219. Color	Standard Methods for the Examination of Water and Waste water ,APHA,AWWA, WEF,23 rd Ed.,2017,Part 2120 F.

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No.	Type of Sample	Test	Method
38	Feeding stuffs Oilseed residues	220. Moisture	ISO 771 :1977
39	- Feeding Stuff and raw materials - Pet food	221. Moisture	ISO 6496:1999
		222. Ash	AOAC (2019) 942.05
		223. Carbohydrate	Method of Analysis for Nutrition Labeling (1993) Chapter 6, Page 105-107
		224. Energy	
		225. Protein	In-house method TI-C00-016 based on ISO 5983-2:2009
		226. Nitrogen	
		227. Fat (Acid hydrolysis)	In-house method TI-C00-027 based on ISO 6492: 1999
		228. Fat	In-house method TI-C00-015 based on AOAC (2019) 920.39
			In-house method TI-C00-097 based on AOCS (2010) Am 5-04
		229. Fiber	In-house method TI-C00-040 based on AOAC (2019) 978.10
			In-house method TI-C00-092 based on AOCS (2016) Ba 6a-05
		230. Phosphorus	AOAC (2019) 965.17
		231. Sodium Chloride (NaCl)	In-house method TI-C00-020 based on ISO 6495 :1999
232. Chloride			

The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

No.	Type of Sample	Test	Method
39	- Feeding Stuff and raw materials - Pet food	Total Amino Acid 233. Alanine (Ala) 234. Arginine (Arg) 235. Aspartic Acid (Asp) 236. Cystine (Cys) and Cysteine 237. GABA 238. Glutamic Acid (Glu) 239. Glycine (Gly) 240. Hydroxy lysine 241. Hydroxy proline 242. Histidine (His) 243. Isoleucine (Ile) 244. Leucine (Leu) 245. Lysine (Lys) 246. Methionine (Met) 247. Methionine sulfoxide 248. Ornithine 249. Phenylalanine (Phe) 250. Proline (Pro) 251. Serine (Ser) 252. Taurine (Tau) 253. Threonine (Thr)	ISO 13903: 2005

The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

No.	Type of Sample	Test	Method
39	- Feeding Stuff and raw materials	254. Tyrosine (Tyr)	ISO 13903: 2005
		255. Valine (Val)	
	- Pet food	256. Lead (Pb)	In-house method TI-C00-108 based on AOAC (2019) 999.11
		257. Cadmium (Cd)	In-house method TI-C00-102 based on AOAC (2019) 999.11
		258. Arsenic (As)	In-house method TI-C00-107 based on AOAC (2019) 986.15
		259. Calcium (Ca)	In-house method TI-C00-114 based on AOAC (2019) 968.08
		260. Copper (Cu)	In-house method TI-C00-113 based on AOAC (2019) 968.08
		261. Magnesium (Mg)	In-house method TI-C00-112 based on AOAC (2019) 968.08
		262. Manganese (Mn)	In-house method TI-C00-110 based on AOAC (2019) 968.08
		263. Sodium (Na)	In-house method TI-C00-116 based on AOAC (2019) 968.08
		264. Potassium (K)	In-house method TI-C00-115 based on AOAC (2019) 968.08

The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

No.	Type of Sample	Test	Method
39	- Feeding Stuff and raw materials	265. Iron (Fe)	In-house method TI-C00-109 based on AOAC (2019) 968.08
	- Pet food	266. Zinc (Zn)	In-house method TI-C00-111 based on AOAC (2019) 968.08
40	- Premix - Mineral Supplement (for Animal Feed, Pet Food)	Free Amino Acid 267. Taurine (Tau) 268. Aspartic Acid (Asp) 269. Threonine (Thr) 270. Serine (Ser) 271. Glutamic Acid (Glu) 272. Proline (Pro) 273. Glycine (Gly) 274. Alanine (Ala) 275. Cystine (Cys) 276. Valine (Val) 277. Methionine (Met) 278. Isoleucine (Ile) 279. Leucine (Leu) 280. Tyrosine (Tyr) 281. Phenylalanine (Phe) 282. Histidine (His) 283. Lysine (Lys) 284. Arginine (Arg)	ISO 13903: 2005

The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

No.	Type of Sample	Test	Method	
40	- Premix - Mineral Supplement (for Animal Feed, Pet Food)	285. Hydroxy lysine	ISO 13903: 2005	
		286. Hydroxy proline		
		287. Ornithine		
		288. Methionine sulfoxide		
		289. GABA		
		290. Arsenic(As)		In-house method TI-C00-107 based on AOAC (2019) 986.15
		291. Cadmium (Cd)		In-house method TI-C00-102 based on AOAC (2019) 999.11
		292. Lead (Pb)		In-house method TI-C00-108 based on AOAC (2019) 999.11
41	-Feeding Stuff and raw materials Cereal and cereal product Raw materials extracted from oil	293. Magnesium (Mg)	In-house method TI-C00-112 based on AOAC (2019) 968.08	
		294. Manganese (Mn)	In-house method TI-C00-110 based on AOAC (2019) 968.08	
		295. Zinc (Zn)	In-house method TI-C00-111 based on AOAC (2019) 968.08	
		296. Iron (Fe)	In-house method TI-C00-109 based on AOAC (2019) 968.08	
		297. Crude protein	AOAC (2019) AOAC (2019) 990.03	

The laboratory of Betagro Science Center Co., Ltd. has been accepted as an accredited laboratory in the field of food and feeding stuffs testing for the following scopes.

Remark :* as described

Sweeteners: Sugar, sweeteners and honey in powder and liquid form

- Foods** :
- Meat and meat products (Fresh, Chilled, Frozen, Processed)
 - Fish and fish products (Fresh, Chilled, Frozen, Processed)
 - Eggs and egg products (Fresh, Chilled, Frozen, Processed)
 - Seasoning
 - Ready-to-Cook Foods
 - Ready-to-Eat Foods
 - Semi processed Foods
 - Vegetables fruit and vegetables fruit products
 - Cereal and cereal Product
 - Flour and Starches
 - Dairy products and analogues
 - Fats and oils, and fat emulsions
 - Edible ices, including sherbet and sorbet
 - Fruits and vegetables seaweeds, and nuts and seeds
 - Confectionery
 - Bakery wares
 - Sweeteners, including honey
 - Salts, spices, soups, sauces, salads and protein products
 - Foodstuffs intended for particular nutritional uses
 - Beverages
 - Ready-to-eat savouries

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Reviewed by Head of Laboratory Accreditation Section (Mr.Surasak Muenphon)

