



# INSTITUTE OF NUTRITION, MAHIDOL UNIVERSITY

## Analytical Services Pricelist

Important note: Discount of 5% will be offered for customer when service cost has over \$3,000 USD.

### 1. NUTRITIVE VALUES

Analysis	Methods	Test duration (days)	Service cost (\$USD)
<b>1.1 Common nutrients</b>			
Energy/Available Carbohydrate (include results of protein, fat, ash, moisture and dietary fiber)	By calculation	15	249
Energy/Total Carbohydrate (include results of protein, fat, ash and moisture)	By calculation	15	91
Energy (bomb)	ASTM Method D 2015-77	10	48
Moisture	AOAC (2023) 927.05 (Vacuum oven, dried milk), 990.19 (Hot air oven, milk), 925.10 (Hot air oven, flour), 925.45 (Use acid-washed sand, Vacuum oven), 931.04 (Hot air oven)	10	16
Total solid	AOAC (2023) 990.19 (Hot air oven, milk)	10	16
Protein/Nitrogen	AOAC (2023) 991.20 (Kjeldahl), 992.23 (Combustion)	6	24
Real protein	In-house method based on AOAC (2023) 991.20 (Kjeldahl)	3	32
Fat/Total lipid	AOAC (2023) 932.06 (Alkali digest, milk), 989.05 (Alkali digest, dried milk), 922.06 (Acid digest, flour)	4	32
Ash	AOAC (2023) 930.30 (Dry ashing, dried milk), 945.46 (Dry ashing, milk)	5	20
Milk solid	By calculation (100-Moisture-Sucrose), In-house method based on AOAC (2023) 990.21, 980.13	9	95
Milk solid not fat	By calculation (100-Moisture-Fat-Sucrose), In-house method based on AOAC (2023) 990.21	9	126
Solid-not-fat in Milk	By calculation (100-Moisture-Fat), In-house method based on AOAC (2023) 990.21	5	48
Dietary fiber	AOAC (2023) 985.29 (Enzyme Gravimetric)	15	158
Insoluble dietary fiber	AOAC (2023) 991.42 (Enzyme Gravimetric)	15	158
Soluble dietary fiber	AOAC (2023) 993.19 (Enzyme Gravimetric)	15	79
Total sugar	AOAC (2023) 980.13 (HPLC)	10	79
Glucose <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Fructose <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Sucrose <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Lactose <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Sorbitol <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Maltose <sup>1</sup>	AOAC (2023) 980.13 (HPLC)	10	119
Glucose, Fructose, Sucrose	AOAC (2023) 980.13 (HPLC)	10	119
Isomaltulose (Palatinose)	AOAC (2023) 980.13 (HPLC)	10	119

<sup>1</sup>Additional sugar in the same sample costs 1,000 baht each

จัดทำ: วิมลรัตน์ มีทวี	ทบทวน: ศุจินตรา สมประชา	อนุมัติ: ครรชิต จุดประสงค์	วันที่ออกใช้: 3 พฤษภาคม 2567
------------------------	-------------------------	----------------------------	------------------------------



# INSTITUTE OF NUTRITION, MAHIDOL UNIVERSITY

Analysis	Methods	Test duration (days)	Service cost (\$USD)
<b>1.2 Vitamins</b>			
Vitamin A	In-house method based on Kangsadalampai K., and Sungpuag P. 1984 (HPLC)	10	79
$\beta$ -carotene	In-house method based on Speek AJ, et al. Food Chem. 1986 (HPLC)	10	79
Vitamin D (D3)	AOAC (2023) 995.05 (HPLC)	10	158
Vitamin D (D3+D2)	AOAC (2023) 995.05 (HPLC)	10	276
Vitamin E	In-house method based on Speek AJ, et al. J Food Sci 1985 (HPLC)	10	79
Vitamin C	Odriozola-Serrano L, et al. Food Chem. 2007 (HPLC)	10	60
Thiamin (B <sub>1</sub> )	In-house method based on AOAC (2023) 942.23 (HPLC)	10	60
Riboflavin (B <sub>2</sub> )	In-house method based on AOAC (2023) 970.65 (HPLC)	10	52
Niacin (B <sub>3</sub> )	In house method based on AOAC (2023) 961.14 (HPLC)	15	79
Vitamin B <sub>6</sub>	In house method based on AOAC (2023) 961.15 (Microbiological assay)	15	119
Vitamin B <sub>12</sub>	In house method based on AOAC (2023) 960.46 and 952.20 (Microbiological assay)	15	111
Folate (B <sub>9</sub> )	In house method based on AOAC (2023) 960.46 and 2004.05 (Microbiological assay)	15	138
Pantothenic (B <sub>5</sub> )	In house method based on AOAC (2023) 960.46 and 945.74 (Microbiological assay)	15	99
Biotin (B <sub>7</sub> )	In house method based on AOAC (1980) Microbiological method, 13th Ed., Ch 43.150-43.158 pp. 763- 764 (Microbiological assay)	15	86
Trypsin inhibitor activity	AACC (1999) Method 22-40 (Enzymatic and spectrophotometer)	10	111

HPLC = High Pressure Liquid Chromatography



# INSTITUTE OF NUTRITION, MAHIDOL UNIVERSITY

Analysis	Methods	Test duration (days)	Service cost (\$USD)
<b>1.3 Minerals</b>			
Calcium <sup>2</sup>	AOAC (2023) 985.35 (AAS)	10	24
Sodium <sup>2</sup>	AOAC (2023) 985.35 (AAS)	10	20
Potassium <sup>2</sup>	AOAC (2023) 985.35 (AAS)	10	20
Chloride <sup>2</sup>	In house method based on AOAC (2023) 971.27 (Titration)	10	32
Magnesium <sup>2</sup>	AOAC (2023) 985.35 (AAS), 984.27 (ICP-OES)	10	28
Iron <sup>2</sup>	AOAC (2023) 985.35 (AAS), 984.27 (ICP-OES)	10	28
Zinc <sup>2</sup>	AOAC (2023) 985.35 (AAS), 984.27 (ICP-OES)	10	28
Copper <sup>2</sup>	AOAC (2023) 985.35 (AAS), 984.27 (ICP-OES)	10	28
<sup>2</sup> Additional mineral in the same sample costs 500 baht for dry ashing or wet digestion			

<b>1.4 Fatty acids</b>			
Fatty acids (profile)	In-house method based on AOAC (2023) 963.22, 969.33 (GC)	10	119
Fatty acids (profile and quantitative)	In-house method based on AOAC (2023) 963.22, 969.33 (GC)	10	150
Trans Fatty acid	In-house method based on AOAC (2023) 963.22, 969.33 (GC)	10	138

<b>1.5 Others</b>			
Cholesterol	AOAC (2023) 994.10 (GC)	10	95
Salt (sodium+chloride)	AOAC (2023) 985.35 (AAS), In house method based on AOAC (2023) 971.27 (Titration)	15	71
Fructans (Inulin + Fructo-oligosaccharides)	In-house method based on AOAC (2023) 997.08 and J. AOAC Inter, 2000 (Enzymes digest, GC)	20	316
Fructo-oligosaccharides (FOS)	In-house method based on AOAC (2023) 997.08 and J. AOAC Inter, 2000 (Enzymes digest, GC)	20	355
Antioxidant Activity (ORAC) (Food)	Ou B, et al. J Agric Food Chem, 2001	10	138
Antioxidant Activity (ORAC) (Oil)	Prior R.L. et al. J Agric Food Chem, 2003	10	355
Antioxidant Activity (FRAP)	Benzie IF & Strain JJ. Anal Biochem 1996	10	99
Antioxidant Activity (DPPH)	Katsuke T. J Agric Food Chem 2004	10	99
Total Polyphenol	Lu J, et al. J Agric Food Chem 2007	10	79
Co-Enzyme Q10	Kettawan A, et al., J Clin Biochem Nutr. 2007	10	138
Freeze dry (live weight)	Freeze dry system	10	79
Iodine in salt (mg/kg)	UNICEF, ICCIDD, PAMM, WHO, MI. 1995 (Titration)	10	16
Iodine in foods	Dold S, et al., Thyroid 2016 (ICP-MS)	15	138
Deuterium (IRMS) in urine or saliva	IAEA Human Health Series No. 13 (2011) by Isotope Ratio Mass Spectrometry (IRMS)	10	119
Deuterium (FTIR) in saliva	IAEA Human Health Series No. 7 (2010) by Fourier-transform infrared spectroscopy	10	40
Deuterium ( <sup>2</sup> H) & Oxygen ( <sup>18</sup> O) in urine	IAEA human health series, No. 3 (2009) by IRMS	15	197
Calculation of Total body water (TBW)	IAEA Human Health Series No. 13 (2011)	15	8
Calculation of Breast milk intake (BM)	IAEA Human Health Series No. 7 (2010)	15	8
Calculation of Total Energy expenditure (TEE)	IAEA human health series, No. 3 (2009) by IRMS	15	16
Calculation of Uncertainty	Ellison SLR, Williams A. EURACHEM/CITAC, 2012.	10	12

<sup>2</sup>Additional sugar in the same sample costs \$40 USD for each sugar.

จัดทำ: วิมลรัตน์ มีทวี	ทบทวน: ศุจินตรา สมประษา	อนุมัติ: ครรชิต จุดประสงค์	วันที่ออกใช้: 3 พฤษภาคม 2567
------------------------	-------------------------	----------------------------	------------------------------



## INSTITUTE OF NUTRITION, MAHIDOL UNIVERSITY

**Note:** - This pricelist can be changed without prior notification.

- Fees of shipping and transfer payment are not included in this analytical service.

Institute of Nutrition, Mahidol University at Salaya

Putthamonthon IV Rd., Nakhon Pathom 73170, Thailand.

Tel. +662 441 9346, +662 800 2380 ext. 406, 418. Fax. +662 441 9344

E-mail: [wimolrat.mee@mahidol.ac.th](mailto:wimolrat.mee@mahidol.ac.th), [vaewmanee.cha@mahidol.ac.th](mailto:vaewmanee.cha@mahidol.ac.th), [Sujintra.Som@mahidol.ac.th](mailto:Sujintra.Som@mahidol.ac.th)

Head of Technical survive unit: Assoc. Prof. Aikkarach Kettawan

E-mail: [aikkarach.ket@mahidol.ac.th](mailto:aikkarach.ket@mahidol.ac.th)

Quality manager of ISO 17025: Assoc.Prof. Kunchit Judprasong

E-mail: [kunchit.jud@mahidol.ac.th](mailto:kunchit.jud@mahidol.ac.th)

จัดทำ: วิมลรัตน์ มีทวี	ทบทวน: ศุจินตรา สมประชา	อนุมัติ: ครรชิต จุดประสงค์	วันที่ออกใช้: 3 พฤษภาคม 2567
------------------------	-------------------------	----------------------------	------------------------------