CECALAIT-S NEWSLETTER

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BEST WISHES FOR 2009 FROM ALL THE TEAM AT CECALAIT

EVALUATION OF THE BENTLEY FTS® INFRARED ANALYSER

FTS, manufactured by Bentley Instruments (US) and commercialised by Bentley Instruments SARL in Western Europe, is a mid-infrared spectrophotometer (2-10 µm) for the determination of the different components in milk samples.

This instrument uses a high resolution industrial infrared spectrometer based on Fourier transform (FTIR). The interferometer is referenced by a laser and placed in an anti-vibration, temperature regulated airtight enclosure. The complete infrared spectrum is collected and recorded for each sample. Using a MLR or PLS calibration, and with a high work rate (500 samples / hour), standard components (fat, protein and lactose) and other criteria such as the freezing point (FPD) can be determined.
The apparatus is connected to a computer (software under Windows) that ensures the running of the instrument and the signal treatment.

ACTILAIT-CECALAIT evaluated the analytical and instrumental characteristics of the instrument for the determination of fat, protein and "freezing point". Its basic characteristics: instrumental stability and tracing appear satisfactory. Its linearity is also accurate for the standard concentration ranges. The repeatability and accuracy values, for individual and herd milks are in conformity with the regulatory and normative requirements.

The tests:
The evaluation tests were performed in ACTILAIT – CECALAIT's physico-chemistry laboratory (reference and infrared analyses) from August to October 2008 and concerned fat (equivalent fat filter B), protein (MP) and freezing point (FPD). The stability of the instrument, the contamination between samples, the linearity, the repeatability and the accuracy (MLR calibration) were evaluated.

The appreciation criteria of the estimated parameters were taken from ISO 9622 / IDF 141C:2000 "Guide for the operation of mid-infrared instruments", or from the CNIEL/IE handbook concerning the use of infrared apparatus within the context of milk payment and milk control in France.

The following instrumental parameters were used:
- rate: 500 samples / hour;
- no correction of contamination;
- functioning in combined mode with the FCM cell counter (purge assistance).

1- EVALUATION OF STABILITY

1.1- Procedure

The stability was evaluated by the analysis, in automatic mode, of 4 samples of milk in duplicate every 15 minutes for half a working day, representing 14 measurement cycles.
To evaluate the stability of the instrument, the repeatability and reproducibility were calculated for each analytical criterion and by level (average content of Fat: 20.19; 41.18; 63.38; 83.64, Protein: 20.37; 30.19; 39.65; 59.66, and FPD: 514.5; 516.1; 514.6; 514.6).

1.2- Conclusion

The average daily values of standard deviation of reproducibility SR observed for fat and protein were 0.16 and 0.14 g/L respectively, which is below the limits required in ISO 9622 / IDF 141 standard (SR < L / 2.58 → 0.27 g/kg ; L = limit of control card at 99 % equal to 0.7 g/kg).

As no standardised values exist or in the absence of values in the CNIEL handbook for FPD, it can be noted that the reproducibility values obtained are lower than the standardised value of the reference method ISO 5764 / IDF 108:2003 (R = 6 m°C. → SR lower than 2.3 m°c).

2- EVALUATION OF CONTAMINATION BETWEEN SAMPLES

2.1- Procedure

This criterion was evaluated in automatic analysis mode, by analysing the same cow milk and distilled water according to the sequence: MILK – MILK - WATER - WATER repeated twenty times for the criteria: fat, protein and FPD. The evaluation was carried out on 4 different fat and protein content: (20, 20) for milk 1; (40, 30) for milk 2; (60, 40) for milk 3 and (80, 60) for milk 4.

The contamination level was estimated by the formula:
Tc (%) = [(Σ(Water 1) - Σ(Water 2)) / (Σ(Water 2) - Σ(Water2))] x 100

2.2- Conclusion

The average contamination level for fat, protein and FPD between successive samples is 0.36%, 0.24% and 0.43% respectively, which is lower than the 1% acceptability limit relative to rapid methods for the determination of milk composition for milk payment and milk control. The contamination level also complies with the manufacturer's specifications: Tc<0.5 %.

3- EVALUATION OF LINEARITY

In all cases, volume/volume dilutions were carried out by corrected weighing of density. This corresponds to the principle of quantitative analysis of infrared spectrophotometry and to the French reference measurements. The FTS instrument was calibrated and aligned by the constructor using only CECALAIT's median and high calibration ranges, i.e. from 22 to 92 g/l for fat and from 24 to 66 g/l for protein.

3.1- Fat

3.1.1- Procedure

A range of 14 milk samples from 0 to 125 g/l was prepared by mixing cream and skimmed milk. The range was analysed in automatic mode, in duplicate, in increasing and then decreasing order of fat content.

3.1.2- Results

The Ar/At ratio (Ar and At: amplitude of residues and amplitude of content respectively) is equal to 2.3 %, that is higher than the limit of 2% expressed in ISO 9622 / IDF 141C standard. However, a linear regression in the range from 0 to about 100 g/l enables a linear section to be characterised. Within this range, the Ar/At ratio is equal to 0.6 %, which corresponds to the recommendations of the standard.

3.2- Protein

3.2.1- Procedure

A range of 14 milk samples from 0 to 85 g/l was prepared by mixing the proteic retentate and filtrate obtained by tangantial ultrafiltration (cutoff threshold: 10KD). The range was analysed in automatic mode, in duplicate, in increasing and then decreasing order of protein content.

3.2.2- Results

The Ar/At ratio within the range of concentrations studied is equal to 0.4%, which is in conformity with the recommendations of 2% maximum given in ISO 9622 / IDF 141C standard.

3.3- Conclusion

The linearity of the instrument is satisfactory for fat (0-100 g/l) and protein (0-85 g/l) content. For fat, an adapted mathematical adjustment would be necessary when using this instrument outside this range, either over the entire range studied (0 to 120 g/L) or over a "high" content range, which corresponds to ewes' milk.

4- EVALUATION OF THE CALIBRATION

4.1- Procedure

The evaluation of the calibration for fat and protein, initially installed by the manufacturer, was performed with 13 commercial "median" and "high" infrared standard reference materials (SRM) produced by Actilait-Cecalait in September 2008. Each sample was analysed in duplicate.

4.2- Results

The table below presents the results obtained:

	N	Min-max	Sr	d	Sd	Sl1	Sl3
Fat (g/l)	13	22-53	0,05	0.31	0.15	0.15	0.10
Protein (g/l) Median	13	24-40	0,06	0.21	0.10	0.10	0.08

Table 1: FTS Calibration parameters for fat and protein
N: number of standards, min and max: minimum and maximum values, Sr: standard deviation of repeatability , d and Sd: mean and standard deviation of deviations (instrument –reference), Sl1 and Sl3: residual standard deviation of simple linear regression (reference vs instrument) or multiple (reference vs MG, MP and lactose).

It can be noted that the residual standard deviation of regression is close to the standard deviation of deviations. The residual interactions are not significant.

4.3- Conclusion

The residual standard deviations of the linear regression of 0.15 g/L and 0.10 g/L obtained for fat and protein are in agreement with the recommendations of the CNIEL/IE handbook (below 0.20 and 0.15 g/l respectively), which corresponds to the content in cows' milk.

5- EVALUATION OF REPEATABILITY AND ACCURACY

5.1- Samples

The tests were performed on 125 samples of individual milk from 4 farms in the Jura and 80 samples of herd milk from the Franche-Comté region. Bronopol was added to the samples to give a final concentration of 0.02%.

5.2- Repeatability

5.2.1- Procedure

The repeatability of the instrument was evaluated using all the milk samples (individual and herd milk) for fat and protein, and using herd milk samples for FPD. The quantitative analyses were performed in automatic analysis mode, in duplicate for each set of 10 samples according to the following sequence: (Set 1 rep 1 - Set 1 rep 2 - Set 2 rep 1 - Set 2 rep 2 … Set n rep 1 - Set n rep 2). A control milk was analysed every 30 samples to verify the stability of the analyser.

5.2.2- Results

5.2.2.1- Individual milk

The table below presents the results obtained:

	n	min	max	M	Sx	Sr	Sr (%)	r
Fat (g/l)	125	15.7	50.1	35.13	5.93	0.047	0.13	0.13
Protein (g/l)	125	27.4	41.5	33.83	2.80	0.076	0.22	0.21

Table 2: FTS repeatability parameters for fat and protein in individual milk
n: number of results; min and max: minimum and maximum values, M and Sx: mean and standard deviation of the results; Sr and Sr%: absolute and relative standard deviation of repeatability; r: maximum deviation of repeatability in 95% of cases.

5.2.2.2- Herd milk

	n	min	max	M	Sx	Sr	Sr (%)	r
Fat (g/l)	80	34.6	45.4	39.64	2.00	0.084	0.21	0.23
Protein (g/l)	74	32.4	38.9	35.77	1.65	0.085	0.24	0.24
FPD (m°c x-1)	80	481	522	515.5	5.8	1.40	0.27	3.88

Table 3: FTS repeatability parameters for fat and protein in herd milk
n: number of results; min and max: minimum and maximum values, M and Sx: mean and standard deviation of the results; Sr and Sr%: absolute and relative standard deviation of repeatability; r: maximum deviation of repeatability in 95% of cases.

5.2.3- Conclusion

For fat and protein content and for both types of milk, FTS presents a standard deviation of repeatability (Sr) of 0.065 g/L and 0.08 g/L respectively, in accordance with the recommendations of ISO 9622/IDF 141 C: 2000 standard and the CNIEL/IE handbook (Sr ≤ 0,14 g/l

and r ≤ 0,4 g/l.). Concerning the freezing point (FPD), the standard deviation of repeatability (Sr) obtained is in accordance with the recommendations of the CNIEL/IE handbook (Sr ≤ 2 m°c → r ≤ 5.5 m°c).

5.3- Accuracy

5.3.1- Procedure

The accuracy of the analyser was evaluated using all the milk samples (individual and herd) for fat and protein, and using the herd milk samples for FPD. The quantitative analyses were performed in accordance with the evaluation of repeatability (cf. 5.2.1). For fat and protein, the evaluation concerns the values obtained after calibration of the instrument with commercial SRMs produced by ACTILAIT-CECALAIT (cf §4). For FPD, the instrumental values are from a calibration carried out by the manufacturer.

The following reference methods were used:
- Fat**:** Gerber acido-butyrometric method according to NF V 04-210 (single test and then confirmation if more important residues for the individual milk samples).
- Protein: Amido black method according to NF V 04-216 (test in duplicate).
- Freezing point: Thermistor cryoscopic method according to ISO 5764/IDF 108 (single test).

5.3.2- Results

5.3.2.1 - Fat

The following table and figures present the results obtained:

	INDIVIDUAL MILK	HERD MILK
n	118	79
min (g/l)	15.7	34.6
max (g/l)	47.9	45.4
Y (g/l)	35.24	39.70
X (g/l)	35.03	39.68
Sy (g/l)	5.85	1.90
d (g/l)	-0.21	-0.01
Sd (g/l)	0.38	0.34
Sy,x (g/l)	0.378	0.324
b	1.010	0.949
a	-0.14	2.03

Table 4: FTS accuracy parameters for fat
n, min, max: number of results, minimum and maximum values; Y,X: mean of the results using the reference and instrumental methods; Sy: standard deviation of the results from the reference method; d, Sd: mean and standard deviation of deviations; Sy,x: residual standard deviation; b, a: slope and intercept of the linear regression.

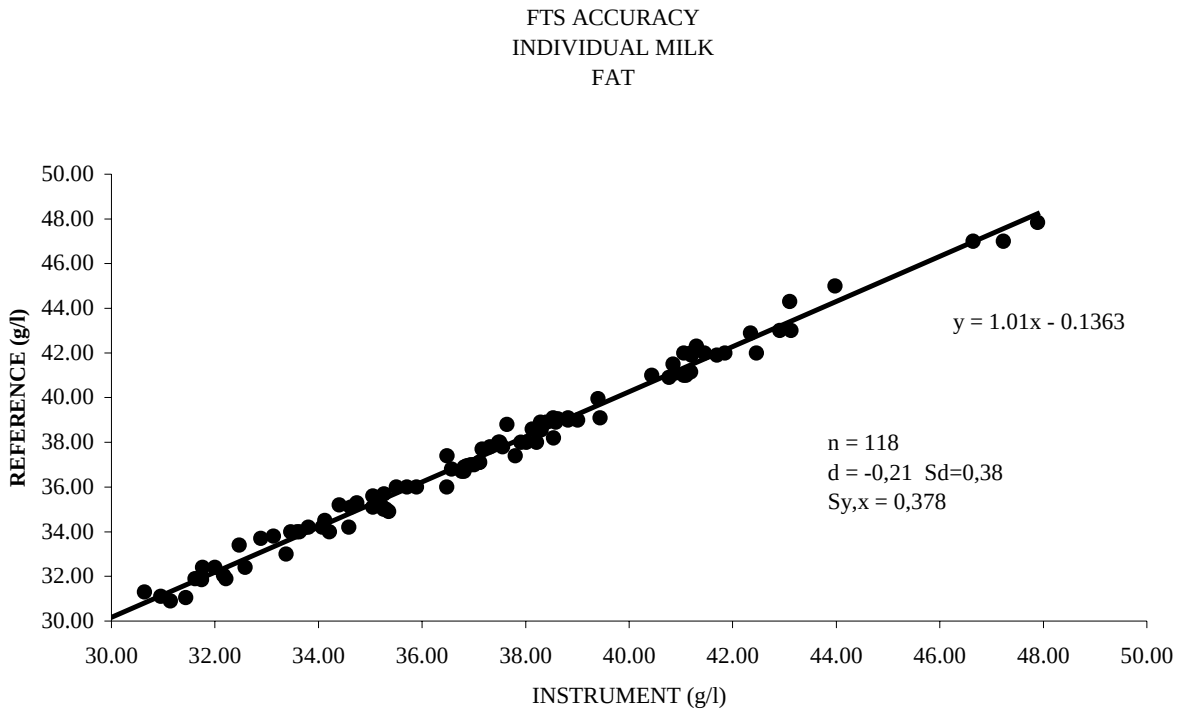

Figure 1: Relation between FTS and reference results for fat in individual milk

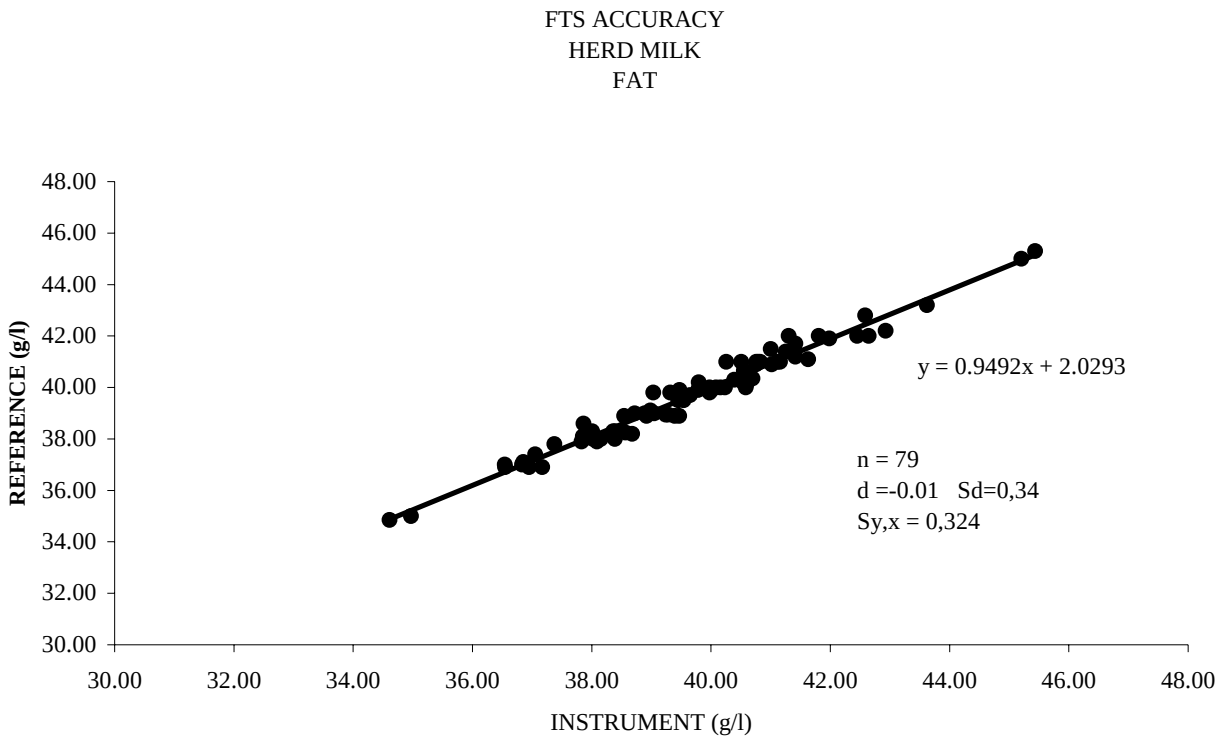

Figure 2: Relation between FTS and reference results for fat in herd milk

It can be noted that:

- Individual milk: mean = –0.21g/l and standard deviation of deviations = 0.38 g/l. The regression slope (-0.14) obtained is not significantly different from zero (P=1%). The residual standard deviation of regression is equal to 0.378 g/l.

- Herd milk: mean = -0.01 g/l and standard deviation of deviations = 0.34 g/l. The regression slope obtained is significantly different from 1.00 (P = 5%) and the intercept is significantly different from zero (P=1%). The residual standard deviation of regression is equal to 0.324 g/l.

5.3.2.2- Protein

The following table and figures present the results obtained.

	INDIVIDUAL MILK	HERD MILK
n	120	74
min (g/l)	27.4	32.4
max (g/l)	41.5	38.9
Y (g/l)	33.88	35.72
X (g/l)	33.79	35.77
Sy (g/l)	2.80	1.65
d (g/l)	-0.09	0.05
Sd (g/l)	0.35	0.22
Sy,x (g/l)	0.349	0.218
b	0.995	0.990
a	0.24	0.32

Table 5: FTS accuracy parameters for protein

n, min, max: number of results, minimum and maximum values; Y,X: mean of the results using the reference and instrumental methods; Sy: standard deviation of the results from the reference method; d, Sd: mean and standard deviation of deviations; Sy,x: residual standard deviation; b, a: slope and intercept of the linear regression.

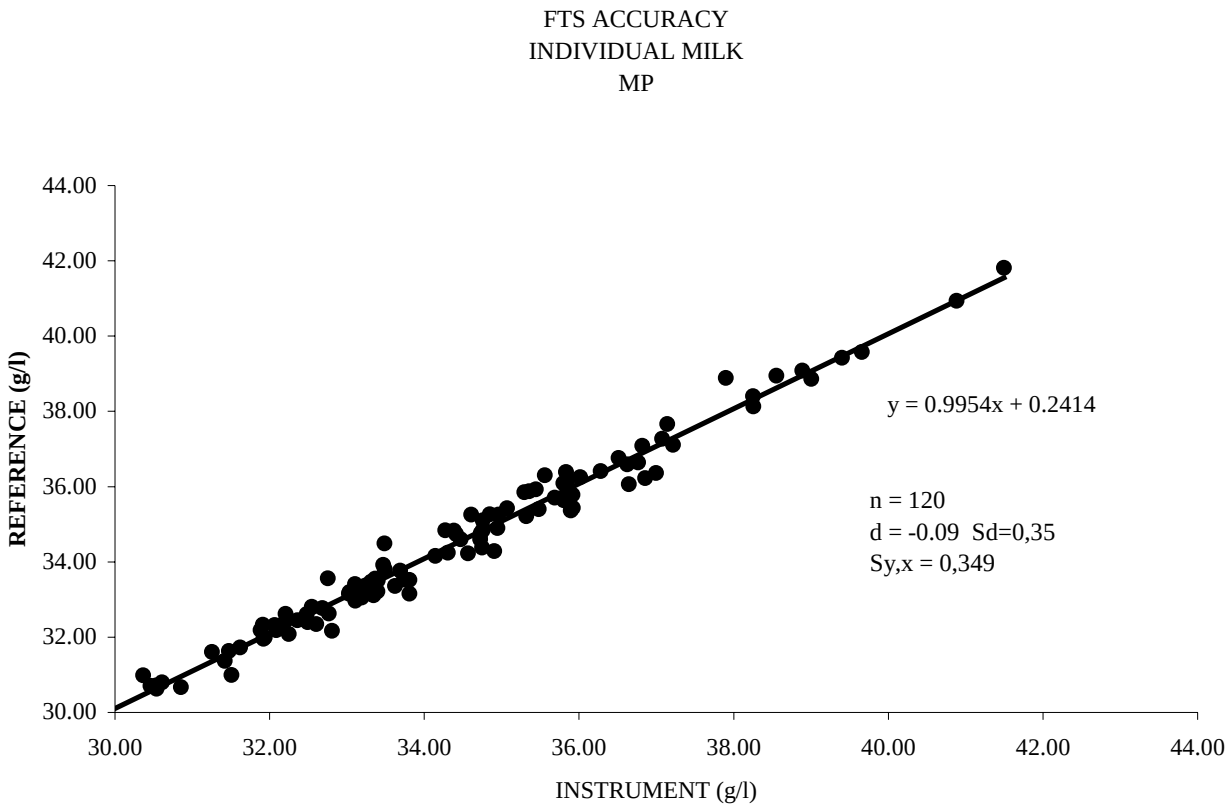

Figure 3: Relation between FTS and reference results for protein in individual milk

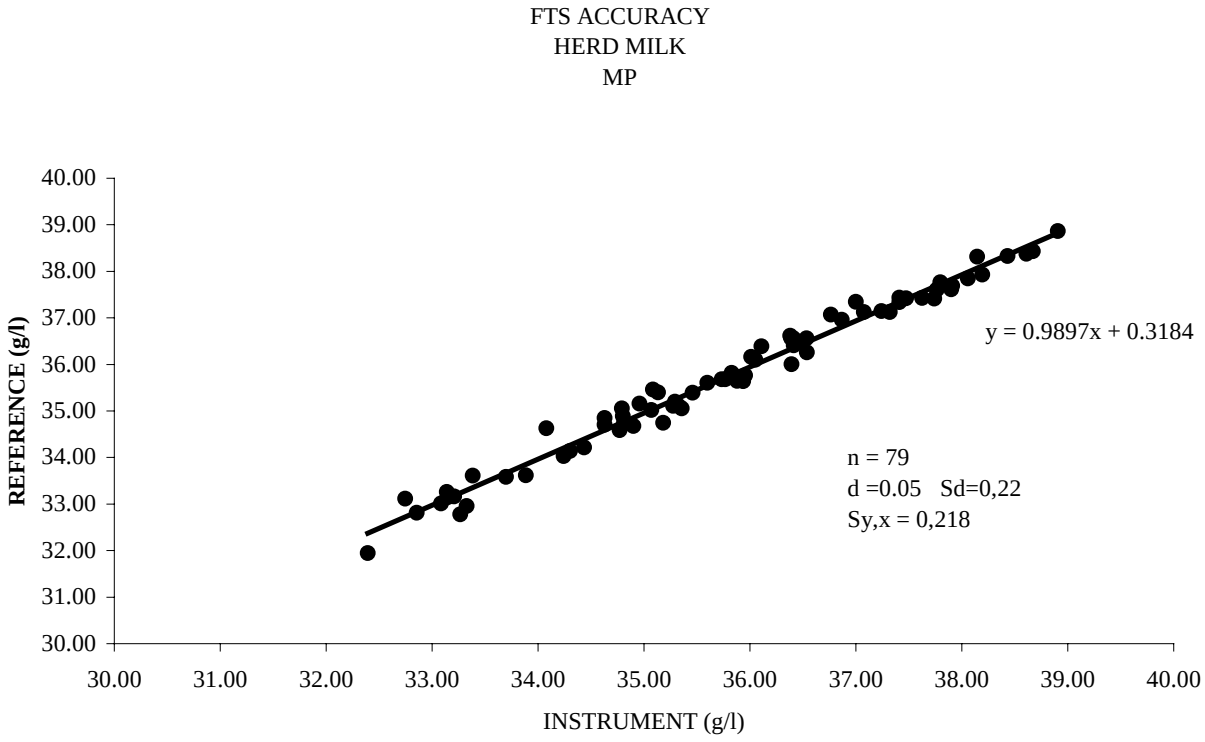

Figure 4: Relation between FTS and reference results for protein in herd milk

It can be noted that:

- Individual milk: mean = -0.09 g/l and standard deviation of deviations = 0.35 g/l. The regression slope obtained is not significantly different from 1.00 (P = 5%) and the intercept is significantly different from zero (P=1%). The residual standard deviation of regression is equal to 0.349 g/l.

- Herd milk: mean = 0.05 g/l and standard deviation of deviations = 0.22 g/l. The regression slope obtained is not significantly different from 1.00 (P = 5%) and the intercept is significantly different from zero (P=1%). The residual standard deviation of regression is equal to 0.218 g/l.

5.3.2.3- FPD

The table and figure below present the results obtained.

	HERD MILK
n	80
min (m°C x-1)	481
Max (m°C x-1)	522
Y (m°C x-1)	521.1
X (m°C x-1)	515.5
Sy (m°C)	5.81
d (m°C x-1)	-5.7
Sd (m°C)	3.1
Sy,x (m°C)	3.03
b	0.853
a	81.5

Table 6: FTS accuracy parameters for FPD

n, min, max: number of results, minimum and maximum values; Y,X: mean of the results using the reference and instrumental methods; Sy: standard deviation of the results from the reference method; d, Sd: mean and standard deviation of deviations; Sy,x: residual standard deviation; b, a: slope and intercept of the linear regression.

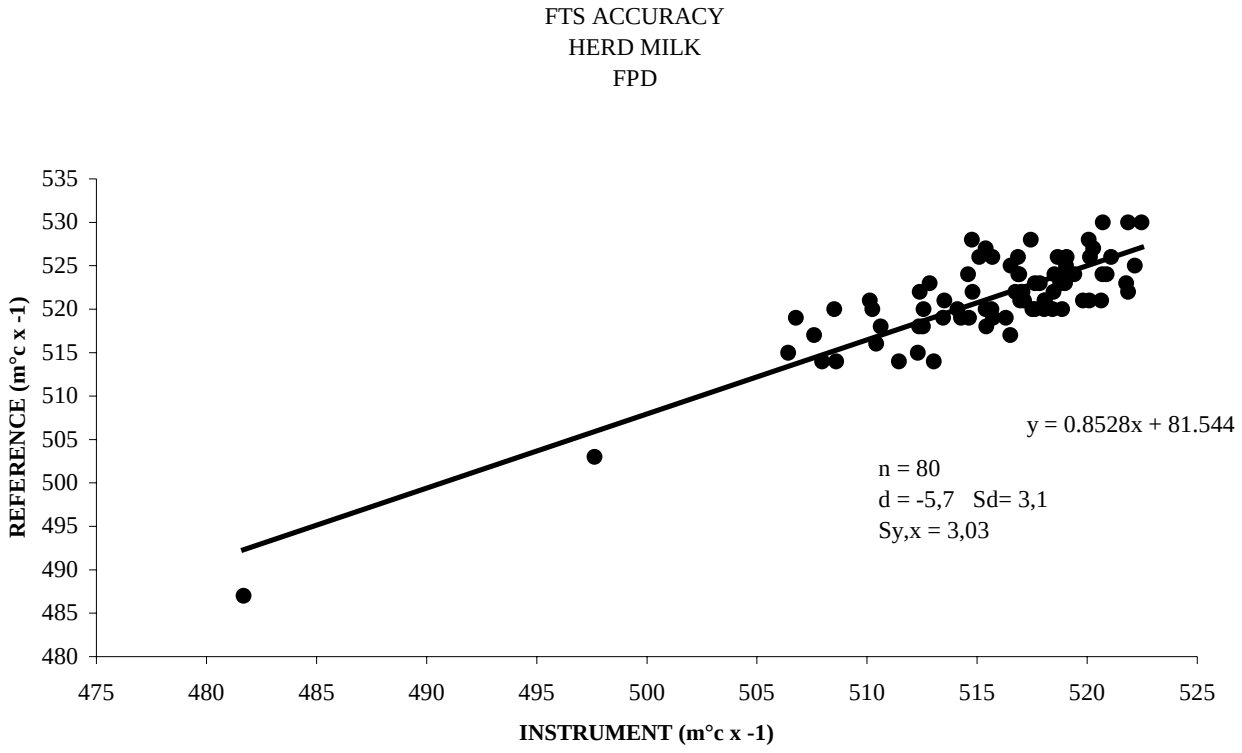

Figure 5: Relation between FTS and reference results for FPD in herd milk

It can be noted that the mean and the standard deviation of deviations are –5.7 (m°C x –1) and 3.1m°C respectively. The regression slope obtained is significantly different from 1.00 (P = 1%) and the intercept is significantly different from zero (P=1%). The residual standard deviation of regression is equal to 3.03 m°C.

5.3.3- Conclusion

Concerning fat, for herd milk samples, the mean deviation and the standard deviation of deviations obtained is in accordance with the recommendations of ISO 9622/IDF 141 C:2000 standard (limits of 0.23 g/l and 0.7 g/l respectively). For individual milk samples, the mean deviation is slightly higher than the tolerance, whereas the standard deviation of deviations is conform (limits of 0.18 g/l and 1 g/l respectively). This exceedance in mean deviation is probably linked to the detailed composition of milk samples taken into account in the validation group.
Concerning protein, for individual and herd milk samples, the means and standard deviation of deviations obtained are in accordance with the recommendations of ISO 9622/IDF 141 C:2000 standard.
Concerning FPD, the standard deviation obtained is 3.0 m°C which enables an accuracy of estimation of +/- 6.0 m°C. The results obtained are in accordance with the specifications of the manufacturer BENTLEY INSTRUMENTS (Sy,x lower than 4 m°C).

GENERAL CONCLUSION

The results obtained concerning fat, protein and freezing point using the Bentley FTS instrument are in conformity with the recommendations of the ISO 9622/IDF 141 C:2000 standard "Guide for the operation of mid-infrared instruments", and the CNIEL/IE handbook for use of infrared instruments within the context of milk payment and milk control in France.

References :

- *Report of evaluation of infrared BENTLEY FTS® analyser - X. QUERVEL, Ph. TROSSAT – Actilait / Cecalait – November 2008.*

- *ISO 9622 / IDF 141C: 2000 standard: Whole milk – Determination of milkfat, protein and lactose content - de la teneur en matière grasse laitière, en protéines et en lactose – Guide for the operation of mid-infrared.*

- *ISO 5764 / IDF 108: 2003 standard: Milk – Determination of freezing point – Thermistor cryoscope method (reference method).*

- *CNIEL/IE handbook for the use of the infrared instruments within the context of milk payment and milk control in France.*

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STANDARDS, DRAFT STANDARDS

Classification in alphabetic order by theme

ISO published standards

CREAM		
CREAM / FAT CONTENT	ISO 2450:2008 (IDF 16) October 2008	CREAM Determination of fat content – Gravimetric method (Reference method)
DRIED MILK AND DRIED MILK PRODUCTS		
DRIED MILK / DRIED MILK PRODUCTS / FAT CONTENT	ISO 1736:2008 (IDF 9) October 2008	DRIED MILK AND DRIED MILK PRODUCTS Determination of fat content – Gravimetric method (Reference method)
EVAPORATED MILK AND SWEETENED CONDENSED MILK		
EVAPORATED MILK / SWEETENED CONDENSED MILK FAT CONTENT	ISO 1737:2008 (IDF 13) October 2008	EVAPORATED MILK AND SWEETENED CONDENSED MILK Determination of fat content – Gravimetric method (Reference method)
MILK-BASED EDIBLE ICES AND ICE MIXES		
MILK-BASED EDIBLE ICES / ICES MIXES / FAT CONTENT	ISO 7328:2008 (IDF 116) October 2008	MILK-BASED EDIBLE ICES AND ICE MIXES Determination of fat content – Gravimetric method (Reference method)
MILK-BASED INFANT FOODS		
MILK-BASED INFANT FOODS / FAT CONTENT	ISO 8381:2008 (IDF 123) October 2008	MILK-BASED INFANT FOODS Determination of fat content – Gravimetric method (Reference method)
SENSORY ANALYSIS		
SENSORY ANALYSIS / VOCABULARY	ISO 5492:2008 October 2008	SENSORY ANALYSIS Vocabulary
SKIMMED MILK, WHEY AND BUTTERMILK		
SKIMMED MILK / WHEY / BUTTERMILK/ FAT CONTENT	ISO 7208:2008 (IDF 22) October 2008	SKIMMED MILK, WHEY AND BUTTERMILK Determination of fat content – Gravimetric method (Reference method)
WHEY CHEESE		
WHEY CHEESE / FAT CONTENT	ISO 1854:2008 (IDF 59) October 2008	WHEY CHEESE Determination of fat content – Gravimetric method (Reference method)

NEW EU REGULATIONS

Classification is established in alphabetical order of the first keyword

ADDITIVES / FOOD ENZYMES / FOOD FLAVOURINGS

O.J.E.U. L 354, 31st December 2008 – Regulation (EC) n° 1331/2008 of the European Parliament and of the Council of 16 December 2008 establishing a common autorisation procedure for food additives, food enzymes and food flavourings
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:354:0001:0006:EN:PDF

O.J.E.U. L 354, 31st December 2008 – Regulation (EC) n° 1332/2008 of the European Parliament and of the Council of 16 December 2008 on food enzymes and amending Council directive 83/417/EEC, Council Regulation (EC) n° 1493/1999, Directive 2000/13/EC, Council Directive 2001/112/EC and regulation (EC) n° 258/97
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:354:0007:0014:EN:PDF

O.J.E.U. L 354, 31st December 2008 – Regulation (EC) n° 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:354:0016:0033:EN:PDF

O.J.E.U. L 354, 31st December 2008 – Regulation (EC) n° 1334/2008 of the European Parliament and of the Council of 16 December 2008 on flavourings and certain food ingredients with flavouring properties for use in and on foods and amending Council Regulation (EEC) n° 1601/91, Regulations (EC) n° 2232/96 and (EC) n° 110/2008 and Directive 2000/13/EC
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:354:0034:0050:EN:PDF

COLOURS

O.J.E.U. L 345, 23rd December 2008 – Corrigendum to Commission Directive 95/45/EC of 26 July 1995 laying down specific purity criteria concerning colours for use in foodstuffs
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:345:0116:0116:EN:PDF

DIOXINS

O.J.E.U. L 275, 16th October 2008 – Recommendation of the EFTA surveillance authority n° 119/07/COL of 16 April 2007 on the monitoring of background levels of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in foodstuffs
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:275:0065:0072:EN:PDF

HYGIENE

O.J.E.U. L 277, 18th October 2008 – Commission Regulation (EC) n° 1019/2008 of 17 October 2008 amending Annexes II to Regulation (EC) n° 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:277:0007:0007:EN:PDF

O.J.E.U. L 277, 18th October 2008 – Commission Regulation (EC) n° 1020/2008 of 17 October 2008 amending Annexes II and III to Regulation (EC) n° 853/2004 of the European Parliament and of the Council laying down specific hygiene rules for food of animal origin and Regulation (EC) n° 2076/2005 as regards identification marking, raw milk and dairy products, eggs and egg products and certain fishery products
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:277:0008:0014:EN:PDF

INFANT FORMULAE

O.J.E.U. L 335, 13th December 2008 – Commission Regulation (EC) n° 1243/2008 of 12 december 2008 amending Annexes III and VI to Directive 2006/141/EC as regards compositional requirements for certain infant formulae
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:335:0025:0027:EN:PDF

NAME IN REGISTER / PROTECTED DESIGNATION OF ORIGIN

O.J.E.U. L 257, 25th September 2008 – Commission Regulation (EC) n° 937/2008 of 24 September 2008 approving non-minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Bleu de Gex Haut-Jura or Bleu de Septmoncel (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:257:0008:0009:EN:PDF

O.J.E.U. L 257, 25th September 2008 – Commission Regulation (EC) n° 938/2008 of 24 September 2008 approving non-minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Roquefort (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:257:0010:0011:EN:PDF

STANDARDS - REGULATIONS

O.J.E.U. L 257, 25th September 2008 – Commission Regulation (EC) n° 939/2008 of 24 September 2008 approving non-minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Rocamadour (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:257:0012:0013:EN:PDF

O.J.E.U. L 258, 26th September 2008 – Commission Regulation (EC) n° 942/2008 of 25 September 2008 approving non-minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Epoisses (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:258:0050:0051:EN:PDF

O.J.E.U. L 258, 26th September 2008 – Commission Regulation (EC) n° 943/2008 of 25 September 2008 entering certain names in the register of protected designations of origin and protected geographical indications [Presunto de Campo Maior e Elvas or Paleta de Campo Maior e Elvas (meat-based product) (PGI), Presunto de Santana da Serra or Paleta de Santana da Serra (meat-based product) (PGI), Slovensky ostiepok (cheese) (PGI)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:258:0052:0053:EN:PDF

O.J.E.U. C 255, 8th October 2008 – Publication of an application to Article 6(2) of Council Regulation (EC) n° 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs [Queso Manchego (cheese) (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:255:0010:0015:EN:PDF

O.J.E.U. L 276, 17th October 2008 – Commission Regulation (EC) n° 1014/2008 of 16 October 2008 entering certain names in the register of protected designations of origin and protected geographical indications [(Ceské pivo (beer) (PGI), Cebreiro (cheese) (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:276:0027:0028:EN:PDF

O.J.E.U. L 326, 4th December 2008 – Commission Regulation (EC) No 1204/2008 of 3 December 2008 on the entry of certain names in the 'Register of traditional specialities guaranteed' provided for in Council Regulation (EC) No 509/2006 on agricultural products and foodstuffs as traditional specialities guaranteed
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0007:0011:EN:PDF

O.J.E.U. L 333, 11th December 2008 – Commission Regulation (EC) No 1229/2008 of 10 December 2008 on the entering certain names in the register of protected designations of origin and protected geographical indications [San Simon da Costa (cheese) (PDO), Ail blanc de Lomagne (PGI), Steirischer Kren (PGI)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:333:0003:0004:EN:PDF

O.J.E.U. L 338, 17th December 2008 – Commission Regulation (EC) No 1259/2008 of 16 December 2008 approving minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Bleu d'Auvergne (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:338:0005:0009:EN:PDF

O.J.E.U. L 344, 20th December 2008 – Commission Regulation (EC) n° 1305/2008 of 19 December 2008 approving minor amendments to the specification for a name entered in the register of protected designations of origin and protected geographical indications [Maroilles or Marolles (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:344:0030:0034:EN:PDF

O.J.E.U. L 345, 23rd December 2008 – Commission Regulation (EC) n° 1326/2008 of 15 December 2008 approving minor amendments to the specification for a name entered in the regisyer of protected designations of origin and protected geographical indications [Chaource (PDO)]
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:345:0020:0023:EN:PDF

PESTICIDES / MAXIMUM LEVELS

O.J.E.U. L 328, 6th December 2008 – Commission Regulation (EC) n° 1213/2008 of 5 December 2008 concerning a coordinated multiannualCommunity control programme for 2009, 2010 and 2011 to ensure compliance with maximum levels of and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:328:0009:0017:EN:PDF

VETERINARY MEDICINAL PRODUCTS

O.J.E.U. L 307, 18th November 2008 – Corrigendum to Commission Regulation (EC) n° 807/2001 of 25 April 2001 amending Annexes II, II and III to Council Regulation (EEC) n° 2377/90 laying down a Community procedure for the establishment of maximum residue limits of veterinary medicinal products in foodstuffs of animal origin
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:307:0021:0021:EN:PDF

BOOKSHOP: LATEST PUBLICATIONS

The classification in alphabetic order of the first keyword allows you to consult the references according to your interests. The web site allows you to know more, or to order the book.

GAS CHROMATOGRAPHY / MASS SPECTROMETRY

HUBSCHMANN H.J. – **Handbook of GC/MS: Fundamentals and Applications** –Wiley Editions – 2008 – ISBN 978-3-527-31427-0 – 736 pages

http://eu.wiley.com/WileyCDA/

This book covers all the knowledge , from sample preparation to the evaluation of MS-data. A large part of the book is devoted to numerous examples for GC/MS-applications in various fields (environment, food, pharmacy…).

FORTHCOMING EVENTS

Classified in chronological order

MILK

20-24 April 2009 Rennes, France	Fourth IDF Dairy Science and Technology Week	http://www.fil-idf-dstw2009.com

IN THE PRESS – ON THE WEB

Classification in alphabetical order of keywords

INFRARED / RAW MILK

Powerful tool for screening raw milk
International Food Hygiene, 2008, V. 19, N. 5, p. 13

Fingerprinting raw materials for safer products
http://www.laboratorytalk.com/news/fos/fos102.html

► Foss Analytical highlights the possibility thanks infrared spectroscopy to recognise pure raw milk.

MELAMINE / DAIRY PRODUCTS

Romer introduces analytical methods for melamine
http://www.laboratorytalk.com/news/ror/ror101.html

Agraquant Elisa test kit for dairy products
http://www.laboratorytalk.com/news/ror/ror102.html

TFS method detect melamine and cyanuric acid
http://www.laboratorytalk.com/news/tnm/tnm173.html

MDS develops melamine detection for food
http://www.laboratorytalk.com/news/mol/mol147.html

DART rapidly detects melamine in powdered milk
http://www.laboratorytalk.com/news/jeo/jeo122.html

Validated melamine tests
International Food Hygiene, 2008, V. 19, N. 5, p. 13

Chromatography detection of melamine
International Food Hygiene, 2008, V. 19, N. 5, p. 13

New high-throughput method for detecting melamine
http://www.ifsqn.com/newsdesk_info.php?newsdesk_id=591&osCsid=8a93b82eb73a59fb82d1635929f23518&t=New+High-Throughput+Method+for+Detecting+Melamine

► These articles present new methods and/or materials focused for the detection of melamine in food, particularly milk and infant formula.

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