

Dairy Spec FT - Case Study 1

Instrument performance for different milk products

Raw Milk • Centrifuged Milk • UHT Milk • Ligth Cream • Heavy Cream • Whey
Fat Reduced Milk • Permeate • Retentate



Analysengeräte, Spezialreagenzien, Schnelltests zur Untersuchung von: Getreide, Futtermittel, Mehle, Milch u. Milchprodukte & Rohmilch
Tests auf Antibiotika & Mykotoxine - Schnellanalyse der Betriebshygiene, Produktsicherheit & Haltbarkeit von Lebensmittel – Peel Plate Mikrobiologische Tests



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Experiment Design & Samples Description

220 measurements of different milk products have been used to evaluate instrument performance with manufacturers' calibrations used.

Performance of Bentley Instruments DairySpec FT instrument has been analyzed on different milk based product samples including:

- Centrifuged milk (4 samples),
- Fat reduced milk (4 samples),
- Heavy cream (5 samples, 10 for fat),
- Light cream (5 samples),
- Permeate (5 samples),
- Raw milk (10 samples),
- Retentate (5 samples),
- UHT Milk (5 samples),
- Whey (5 samples).
-

Samples have been measured twice on instrument and then mean values have been compared against reference values of samples (HPLC) for different components of products available*:

- Casein,
- Fat,
- Lactose,
- Total Protein,
- SNF,
- Total Solids.

Performance for each component and product have been evaluated as linear fit between predicted and reference values as is shown bellow. Only original calibrations, of course for different basic products/matrices (UHT, Raw Milk, Light and Heavy Cream, Whey), have been used for predicting values for each component.

* Please, contact us for specific solution and calibrations available.

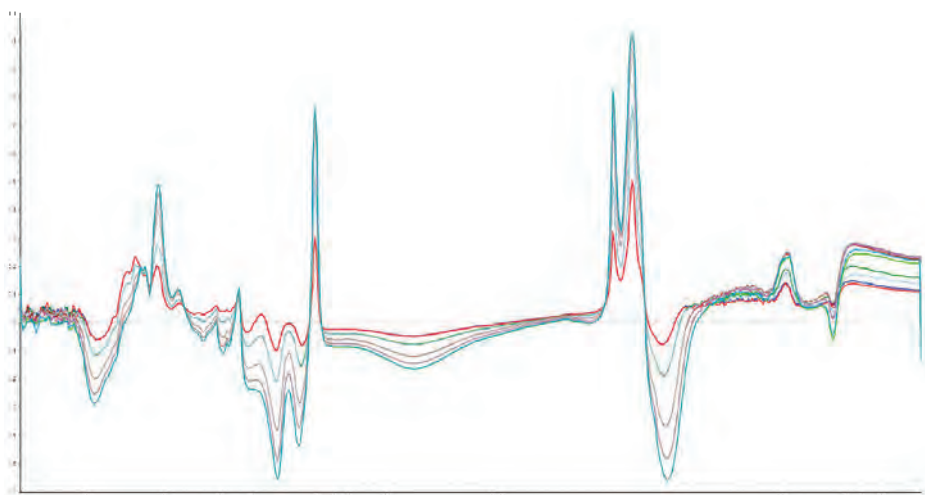
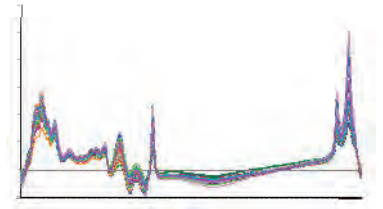


Figure 1. Spectra of heavy cream samples.

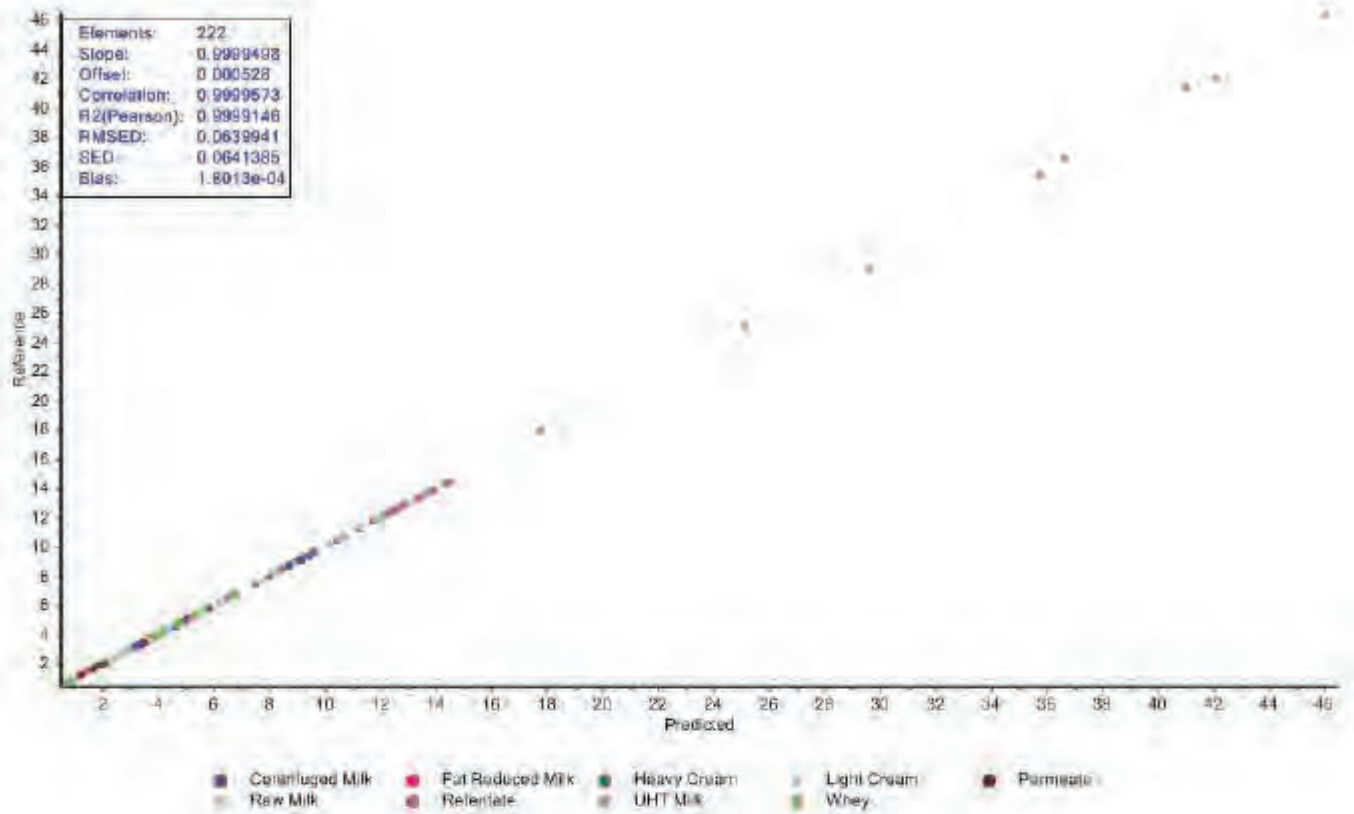


Figure 2. Overall performance of instrument across all of samples by different milk based products.

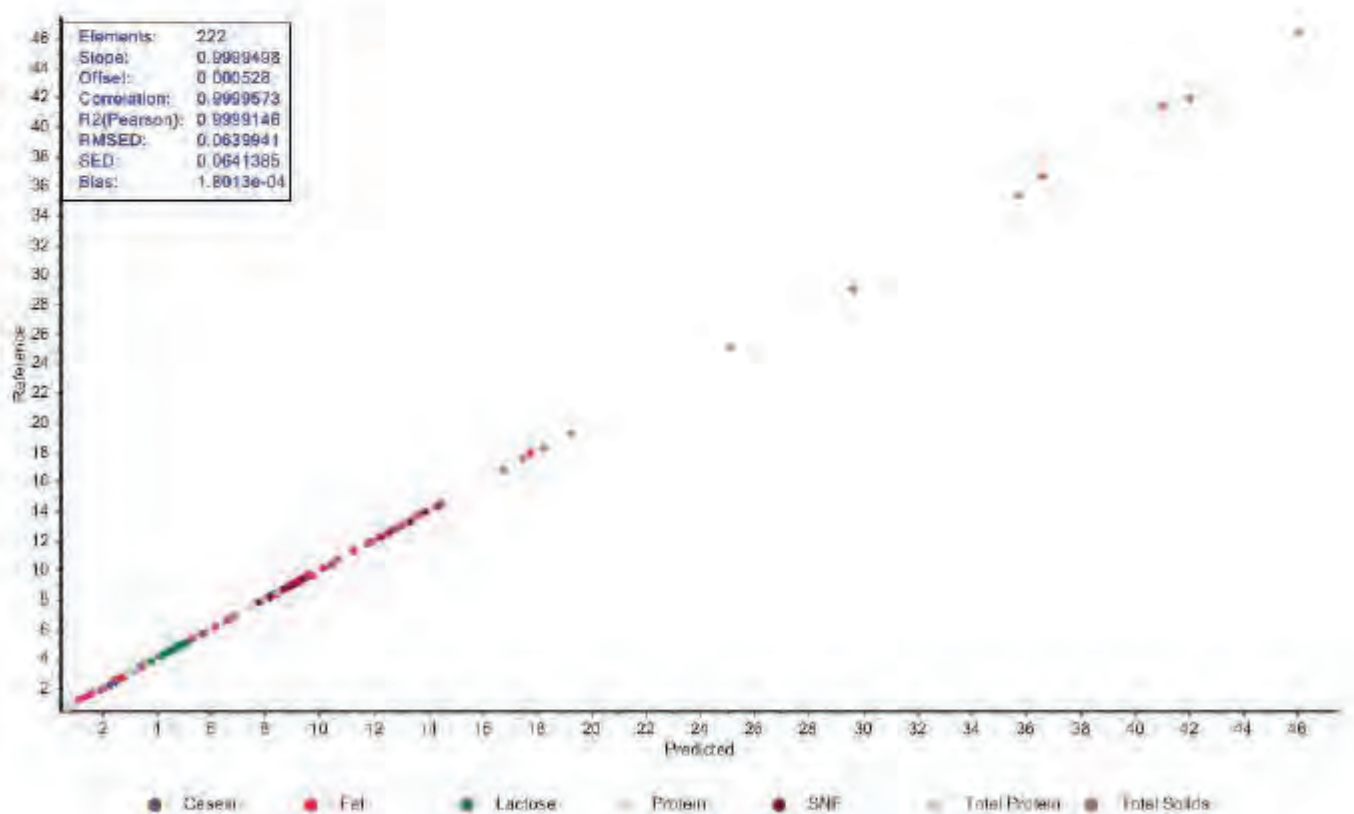


Figure 3. Overall performance of instrument across all of samples by different milk components.

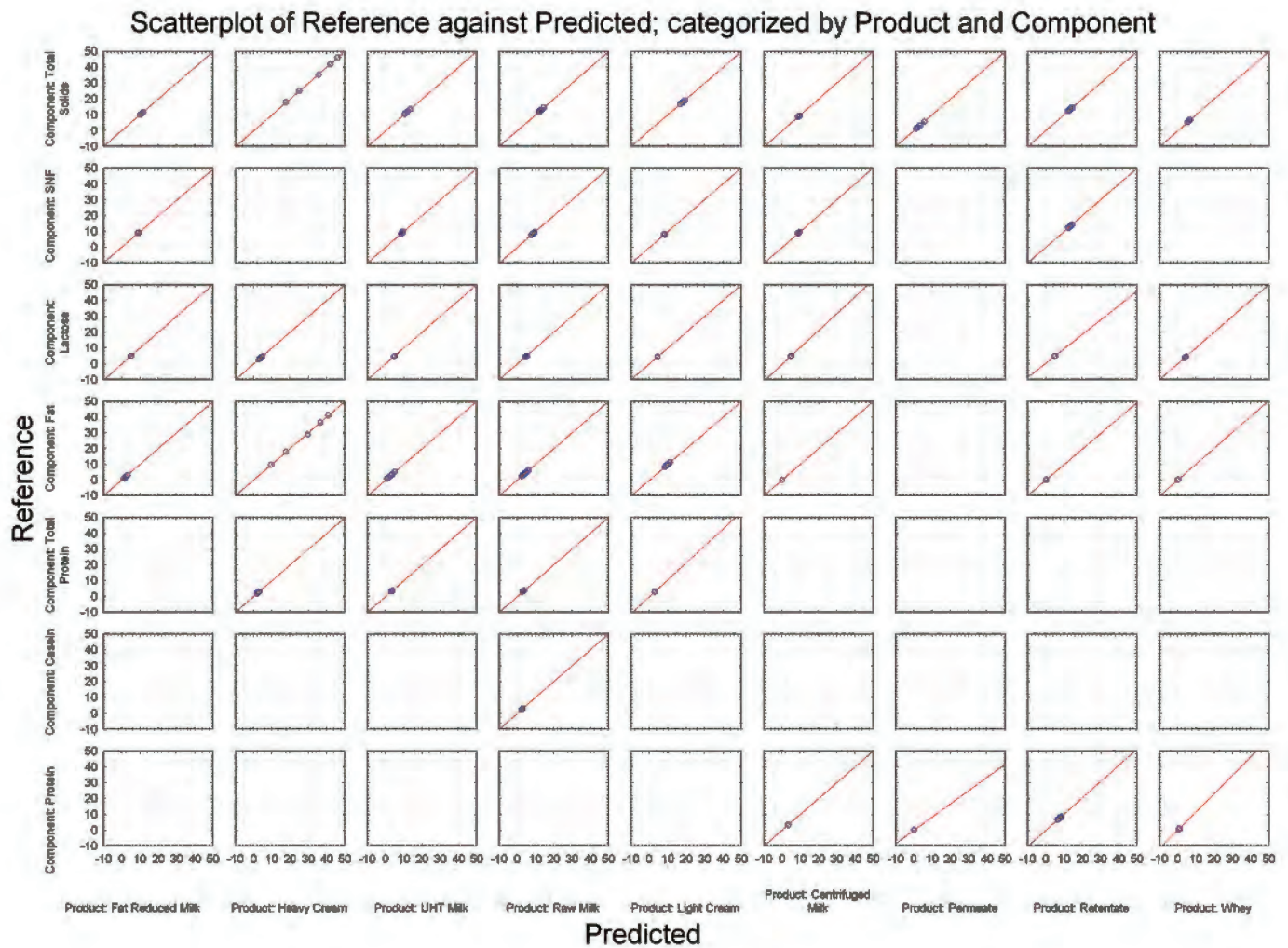


Figure 4. Linear fit scatterplot for reference and predicted value by different milk based products and components.

DairySpec FT

Calibrations • User Friendly System • Different Products • Great Performance • Precision



PeelPlate
zeitgemäße Mikrobiologie

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S & Xgrain
zeitgemäße Getreidemessung

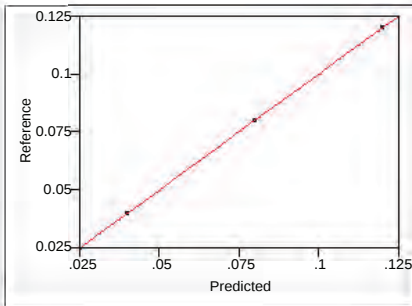
Analysengeräte, Spezialreagenzien, Schnelltests zur Untersuchung von: Getreide, Futtermittel, Mehle, Milch u. Milchprodukte & Rohmilch
 Tests auf Antibiotika & Mykotoxine - Schnellanalyse der Betriebshygiene, Produktsicherheit & Haltbarkeit von Lebensmittel - Peel Plate Mikrobiologische Tests

DairySpec FT - Case Study 1

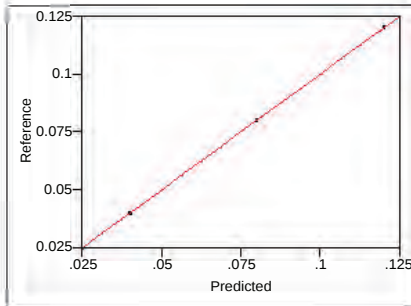
Detailed Results of Performance for Different Milk Based Products and Components

Centrifuged Milk

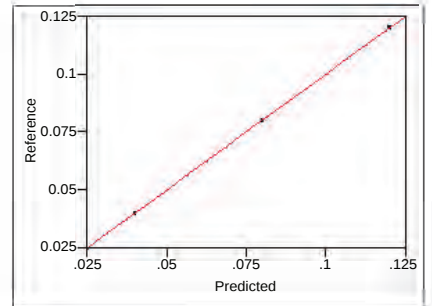
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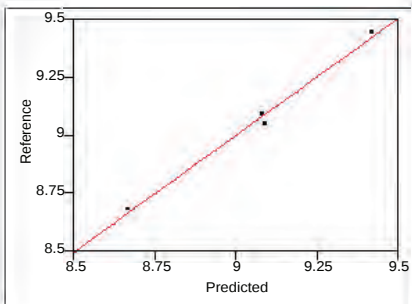
Lactose



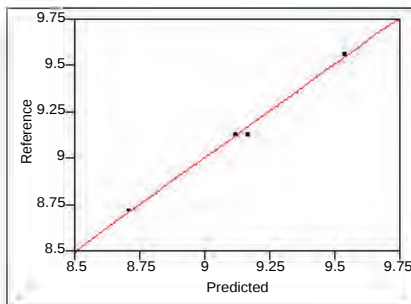
Protein



SNF

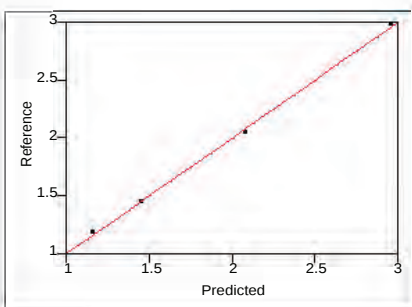


Solids

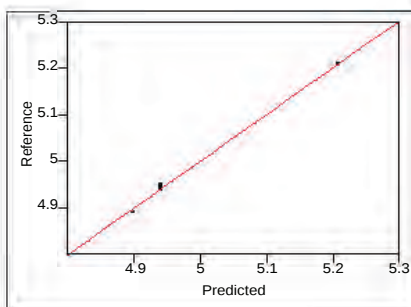


Fat Reduced Milk

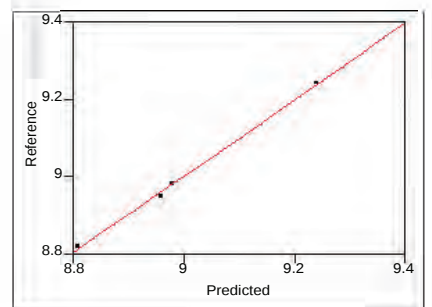
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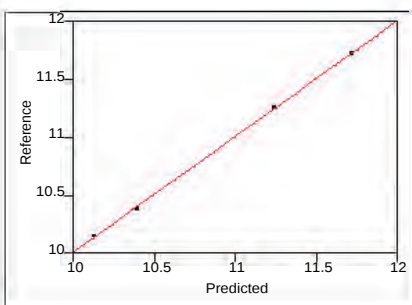
Lactose



SNF



Solids





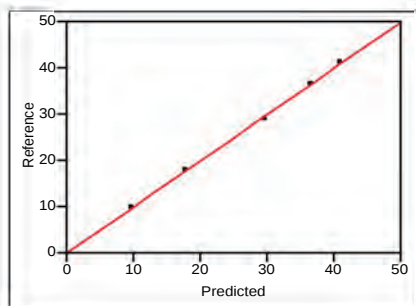
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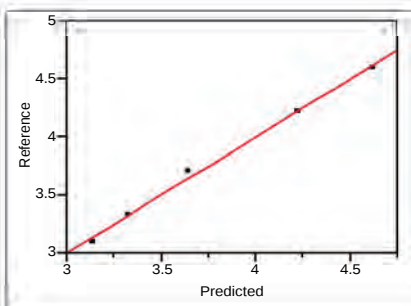
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Heavy Cream

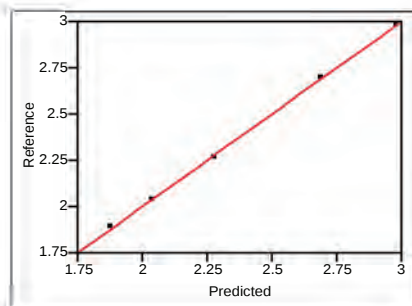
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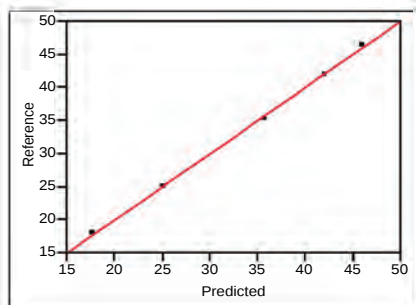
Lactose



Protein

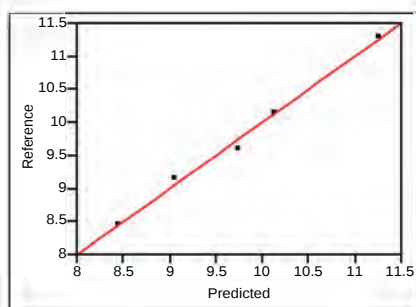


Solids

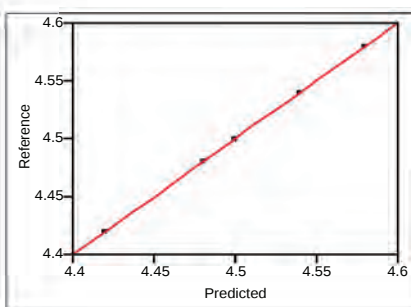


Light Cream

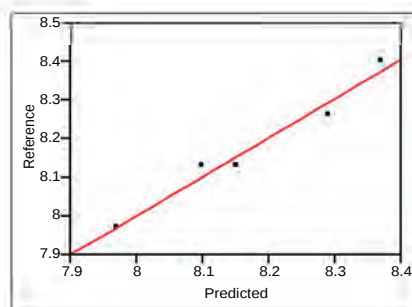
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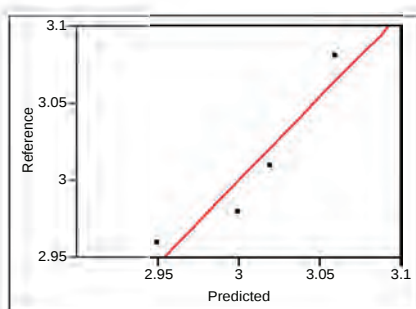
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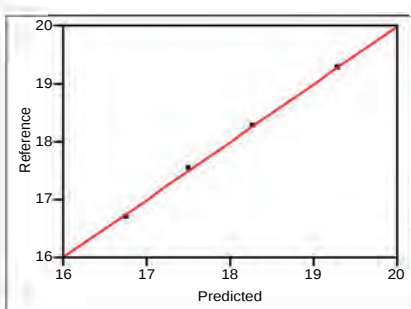
SNF



Protein

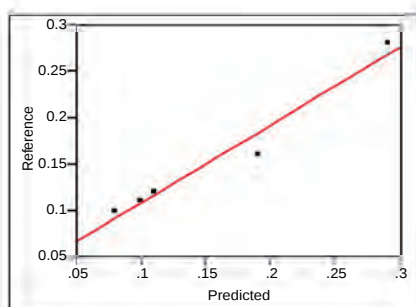


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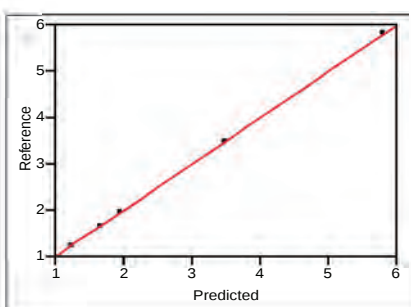


Permeate

Protein

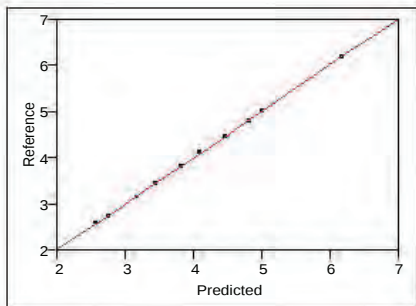


Solids

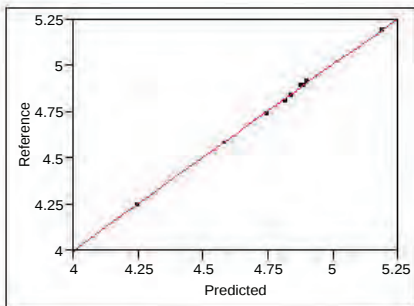


Raw Milk

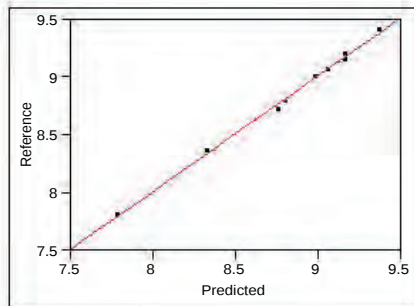
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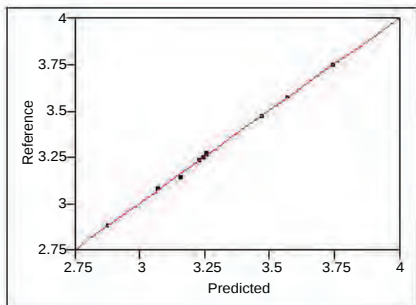
Lactose



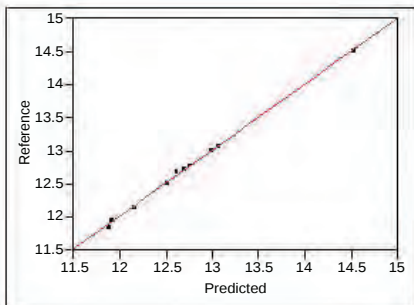
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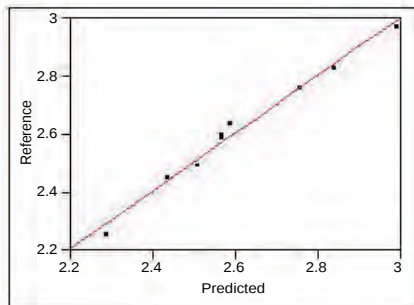
Protein



Solids

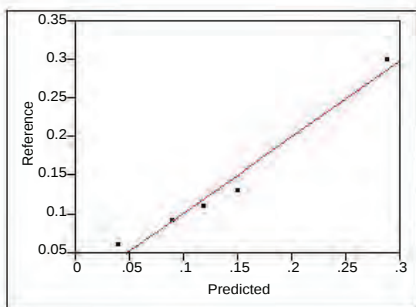


Casein

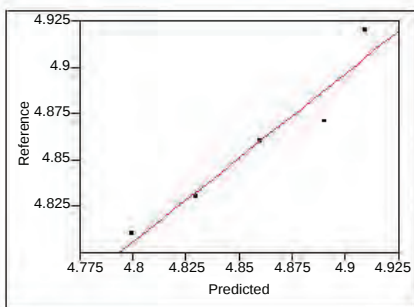


Retentate

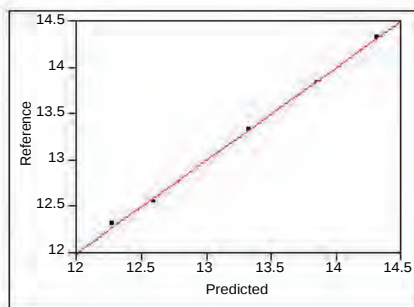
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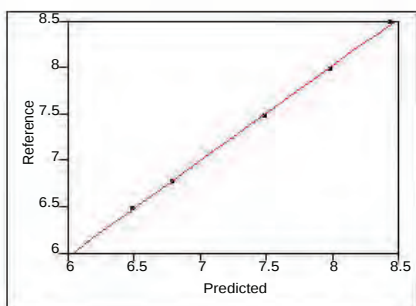
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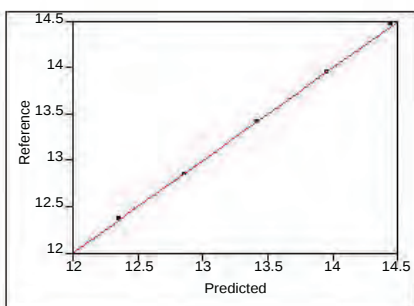
SNF



Protein



Solids





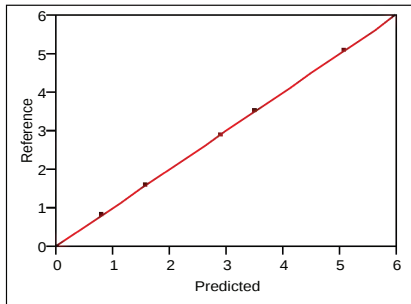
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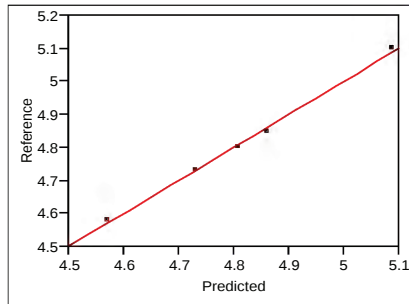
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UHT Milk

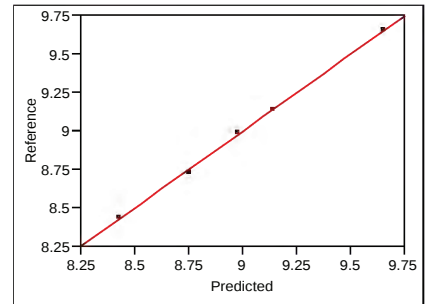
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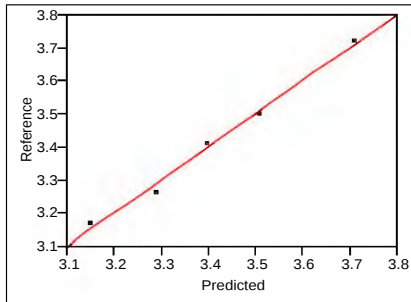
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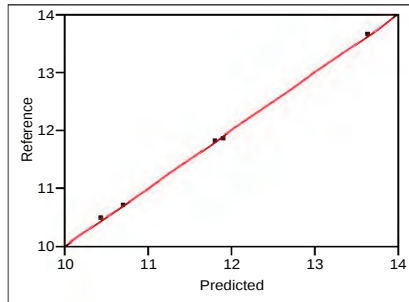
SNF



Protein

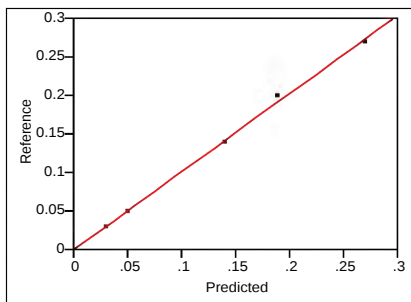


Solids

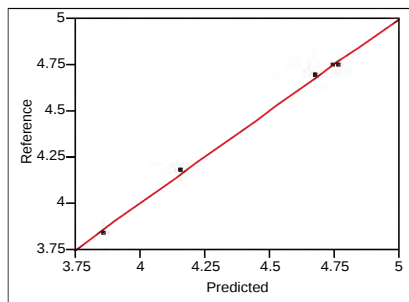


Whey

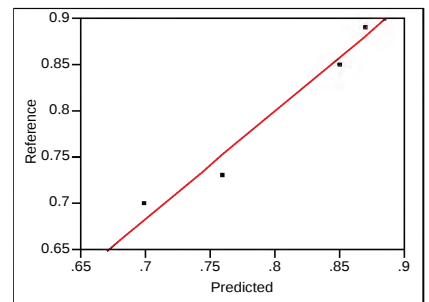
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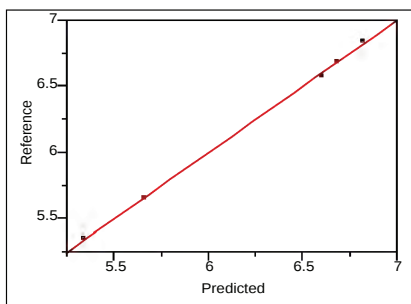
Lactose



Protein



Solids



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DairySpec FT- Case Study 1

Summary Results of Case Study

Product	Parameter	Slope	Bias	RSquare	RSquare Adj	Root Mean Square Error	Mean of Response	Observations
Centrifuged Milk	Fat	1.0000	0.0000	1.0000	1.000	0.0000	0.070	4
	Lactose	1.0676	-0.3289	0.9973	0.996	0.0116	4.828	4
	Protein	1.0000	0.0000	1.0000	1.000	0.0000	3.298	4
	SNF	1.0081	-0.0737	0.9925	0.989	0.0330	9.065	4
	Total Solids	1.0066	-0.0607	0.9938	0.991	0.0331	9.135	4
Fat Reduced Milk	Fat	0.9994	0.0012	0.9987	0.998	0.0346	1.915	4
	Lactose	1.0065	-0.0326	0.9968	0.995	0.0099	4.998	4
	SNF	0.9843	0.1411	0.9981	0.997	0.0094	8.998	4
	Total Solids	0.9989	0.0140	0.9995	0.999	0.0209	10.875	4
Heavy Cream	Fat	0.9998	0.0033	0.9992	0.999	0.4250	26.928	5
	Lactose	1.0000	0.0000	0.9956	0.995	0.0414	3.790	10
	Total Protein	0.9990	0.0044	0.9997	1.000	0.0096	2.376	5
	Total Solids	1.0001	-0.0044	0.9995	0.999	0.2970	33.348	5
Light Cream	Fat	1.0008	-0.0076	0.9937	0.992	0.0990	9.730	5
	Lactose	1.0000	0.0000	1.0000	1.000	0.0000	4.504	5
	SNF	1.0064	-0.0506	0.9704	0.961	0.0320	8.178	5
	Total Protein	1.0797	-0.2396	0.8840	0.826	0.0219	3.008	4
	Total Solids	0.9996	0.0038	0.9987	0.998	0.0473	17.953	4
Permeate	Protein	0.8373	0.0251	0.9634	0.951	0.0164	0.154	5
	Total Solids	1.0000	0.0000	1.0000	1.000	0.0000	2.828	5
Raw Milk	Casein	1.0001	0.0019	0.9829	0.980	0.0301	2.620	9
	Fat	0.9989	0.0044	0.9998	1.000	0.0158	4.035	10
	Lactose	1.0036	-0.0175	0.9993	0.999	0.0070	4.812	10
	SNF	1.0025	-0.0210	0.9975	0.997	0.0264	8.829	9
	Total Protein	1.0002	-0.0006	0.9989	0.999	0.0087	3.290	10
	Total Solids	1.0000	0.0002	0.9986	0.998	0.0300	12.714	10
Retentate	Fat	0.9859	0.0019	0.9720	0.963	0.0182	0.138	5
	Lactose	0.9112	0.4315	0.9240	0.899	0.0134	4.858	5
	Total Protein	1.0300	-0.2232	0.9995	0.999	0.0204	7.440	5
	SNF	1.0006	-0.0117	0.9991	0.999	0.0301	13.270	5
	Total Solids	0.9981	0.0277	0.9998	1.000	0.0149	13.408	5
UHT Milk	Fat	1.0002	0.0015	1.0000	1.000	0.0097	2.780	5
	Lactose	0.9993	0.0033	0.9972	0.996	0.0115	4.812	5
	SNF	0.9989	0.0098	0.9993	0.999	0.0141	8.990	5
	Total Protein	1.0016	-0.0056	0.9913	0.988	0.0231	3.412	5
	Total Solids	1.0005	-0.0059	0.9995	0.999	0.0316	11.702	5
Whey	Fat	1.0137	0.0001	0.9982	0.998	0.0049	0.138	5
	Lactose	1.0027	-0.0141	0.9981	0.998	0.0206	4.442	5
	Total Protein	1.1667	-0.1330	0.9687	0.958	0.0185	0.812	5
	Total Solids	1.0007	-0.0041	0.9994	0.999	0.0183	6.220	5

Table 1. Parameters of linear fit between predicted and reference values for different milk based products and components..

DairySpec FT

All spectral data available for your own specific applications

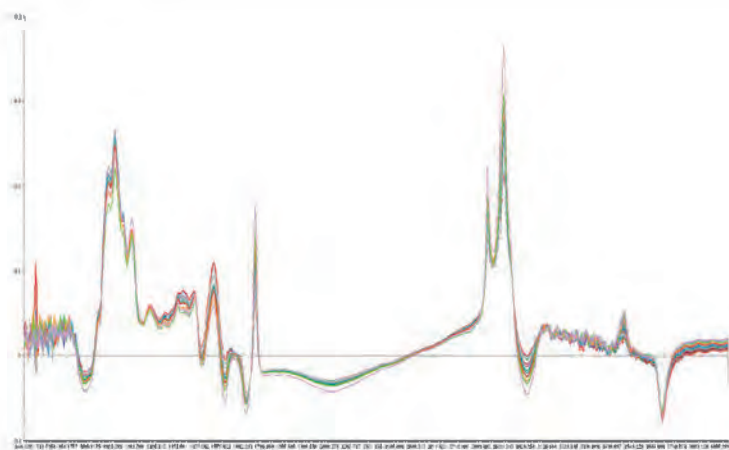


Figure 5. Spectra of raw milk samples.

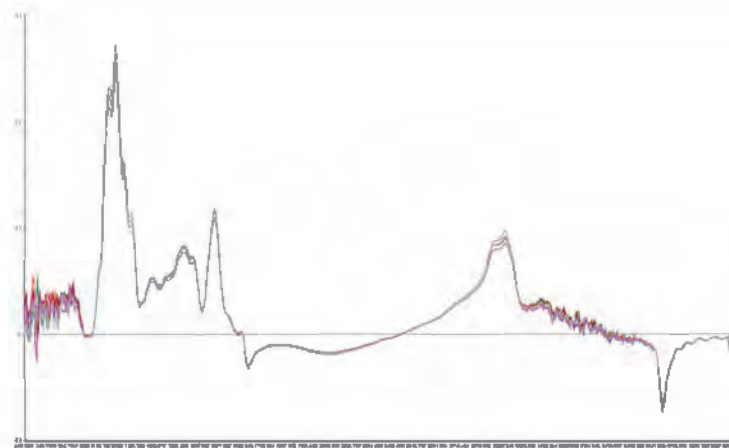


Figure 6. Spectra of light cream samples.

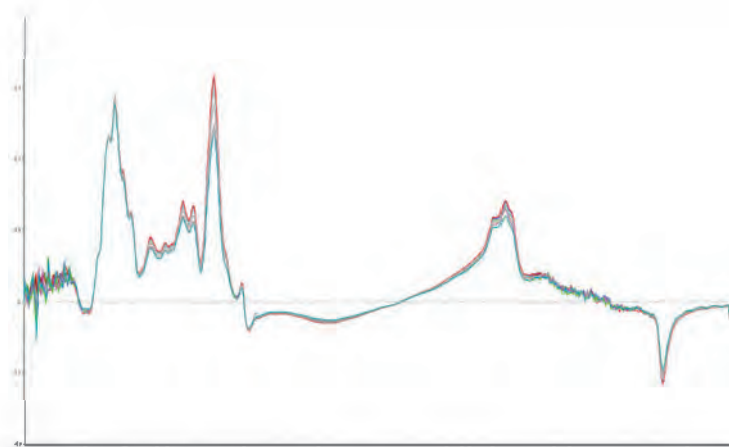


Figure 7. Spectra of retentate samples.

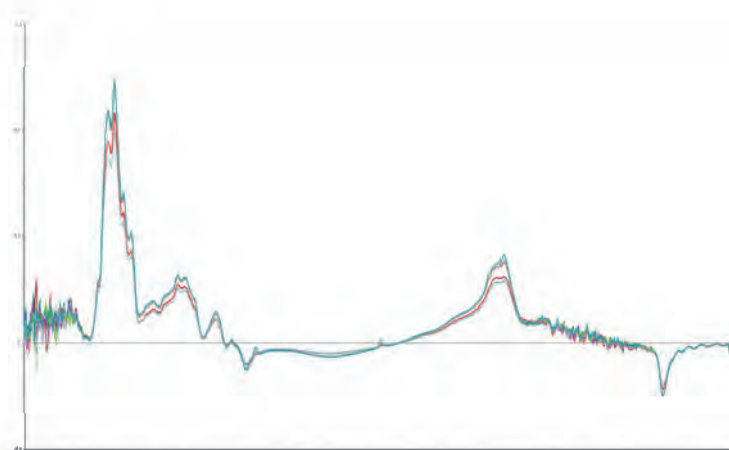


Figure 8. Spectra of whey samples.

Ultimate solution for dairy products analysis



DairySpec FT

Calibrations • User Friendly System • Different Products • Great Performance • Precision

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