Milchprüfring Bayern e.V. and German DHI Laboratories are linked to the EC JRC Certified Reference Material for Somatic Cell Counting

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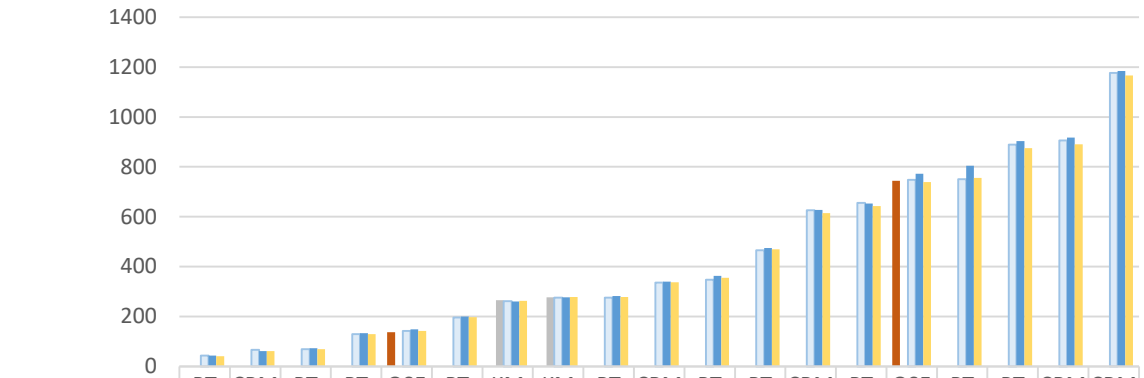
In September 2020 Milchprüfring Bayern e.V. (DE) collaborated with ICAR to characterize the ICAR proficiency test materials. With regard to somatic cell count (SCC) the goal was to assign target values traceable to the first internationally available certified reference material for somatic cell counting produced by the Joint Research Centre of the European Commission (EC JRC CRM SCC) (1). Two fluoro-optoelectronic instruments, routinely calibrated with secondary reference material (produced by QSE GmbH), were used for this task. The samples were analyzed before and after calibration adjustment, using five different levels of concentration of the EC JRC CRM SCC samples. Finally, "mpr anchor" values were calculated for the QSE samples, for the pilot samples (KM) and ICAR materials following the approach reported in the publication of Kuselman et al. (2).

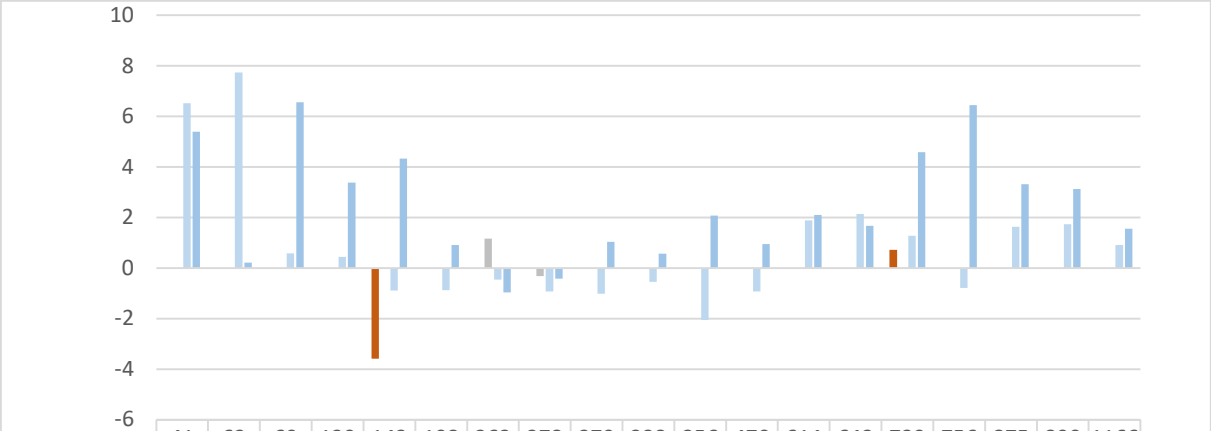
The graph below (Fig. 1) shows the mean results of mpr instruments for the samples tested and reference values traceable with EC JRC CRM SCC. The samples are ordered by concentration from the left to the right.

Fig. 1 – Somatic Cell Count (SCC) for different materials obtained by two instruments before calibration adjustment with EC JRC CRM SCC; mean values after calibration adjustment are reported as "mpr anchored" (yellow bar).



	PT 35	CRM 1	PT 40	PT 39	QSE 2	PT 33	KM 1	KM 2	PT 34	CRM 2	PT 38	PT 36	CRM 3	PT 31	QSE 4	PT 32	PT 37	CRM 4	CRM 5
QSE SRM					138										744				
KM value							266	277											
mpr 1	44	67	70	130	142	196	262	275	276	336	348	466	626	656	748	750	889	905	1177
mpr 2	44	62	74	134	149	200	260	277	282	340	363	474	627	653	773	805	904	918	1184
mpr anchored	41	62	69	129	143	198	263	278	279	338	356	470	614	642	739	756	875	890	1166

Fig.2 – Relative bias (%) for different materials caused by calibration adjustment with EC JRC CRM SCC (ordered by SCC values "mpr anchored")



	41	62	69	129	143	198	263	278	279	338	356	470	614	642	739	756	875	890	1166
QSE SRM					-4										1				
KM							1	0											
mpr 1	7	8	1	0	-1	-1	0	-1	-1	-1	-2	-1	2	2	1	-1	2	2	1
mpr 2	5	0	7	3	4	1	-1	0	1	1	2	1	2	2	5	6	3	3	2

Figure 2 shows the bias caused by calibration adjustment for the different materials tested. Overall, the mean bias of mpr instruments caused by the calibration adjustment with EC JRC CRM SCC is 1% (mpr 1) and 2% (mpr 2). This small bias indirectly indicates that the secondary reference material used for routine calibration (QSE SRM) and pilot samples (KM) ares properly aligned with the EC JRC CRM SCC as well.

The collaboration with ICAR in this characterisation exercise gave us the chance to test the draft IDF guidance how to apply the EC JRC CRM SCC (3) and to check our instruments´ SCC level compared to the certified reference material of JRC, which is regarded as worldwide anchor for SCC now.

From the data obtained and illustrated above we conclude that our eleven fluoro-opto electronic instruments at Milchprüfring Bayern and the QSE secondary reference material are well aligned with the certified reference material of JRC as all instruments are routinely calibrated with QSE secondary reference material. As we are participating in a German national proficiency testing (PT) scheme on a regular base, the good performance in terms of z-score obtained in those PTs could provide the information that also most instruments in Germany are aligned as well to the EC JRC CRM SCC. QSE is already characterizing the new batches traceable with the EC JRC CRM SCC. In order to provide robust evidence of metrological traceability, it is our intention to further apply the procedures of IDF Bulletin 508/2021 and collect and report the relevant data in the future.

Bibliography

1) Orlandini S. 2020. ICAR PT SCC- Traceability with SCC Certified Reference Material https://www.icar.org/index.php/technical-bodies/sub-committees/milk-analysis-sub-committee-landing-page/

2) Kuselman, I., Weisman, A. & Wegscheider, W. 2002. Traceable property values of in-house reference materials. Accred Qual Assur 7 p122-124.

3) van den Bijgaart, H., Orlandini S., Luginbühl W. 2021. IDF Bulletin 508/2021 Guidance and application of EC JRC Certified Reference Material for somatic cell counting in milk