

Supplementary Data

Non-enzymatic colorimetric detection of hydrogen peroxide using a μ PAD coupled with a machine learning-based smartphone app

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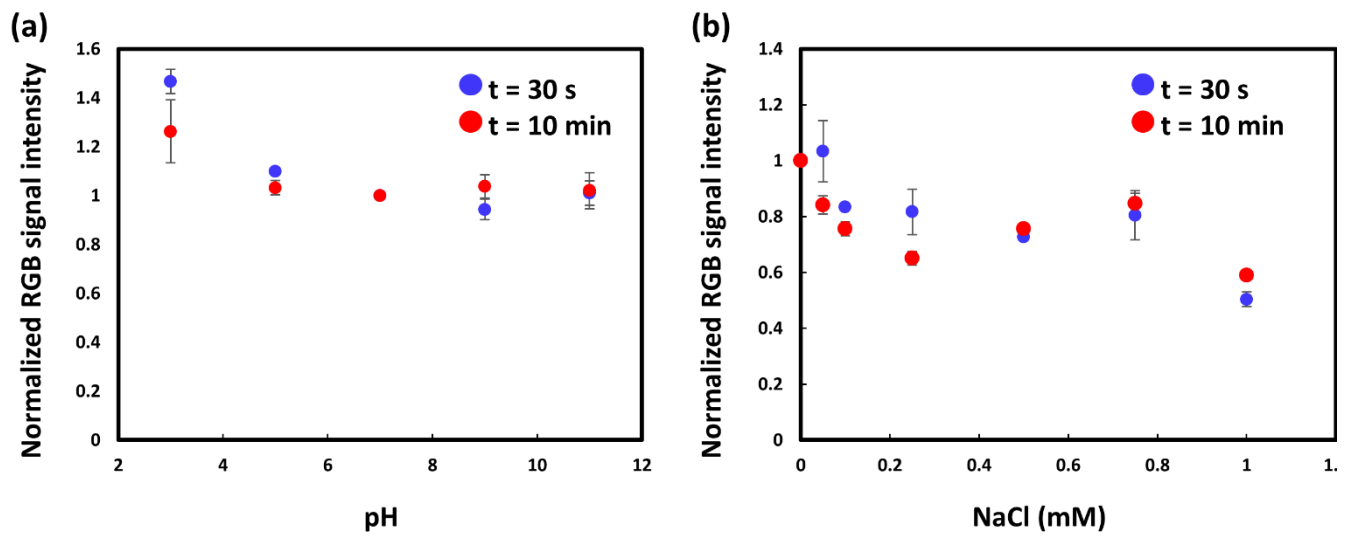


Fig. S1: pH (a) and NaCl (b) dependent behaviour of μ PAD.

Table S1. Evaluation of the LDA for KI at t=30 s in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.79	0.71	0.73
0.01 mM	0.78	0.82	0.72
0.05 mM	0.59	0.61	0.62
0.1 mM	0.64	0.67	0.65
0.2 mM	0.88	0.82	0.78
0.5 mM	0.9	0.88	1
1 mM	0.83	0.71	0.77
5 mM	0.97	1	1
10 mM	0.9	0.84	0.91
25 mM	0.88	1	1
50 mM	1	1	1
Average	0.83	0.82	0.84

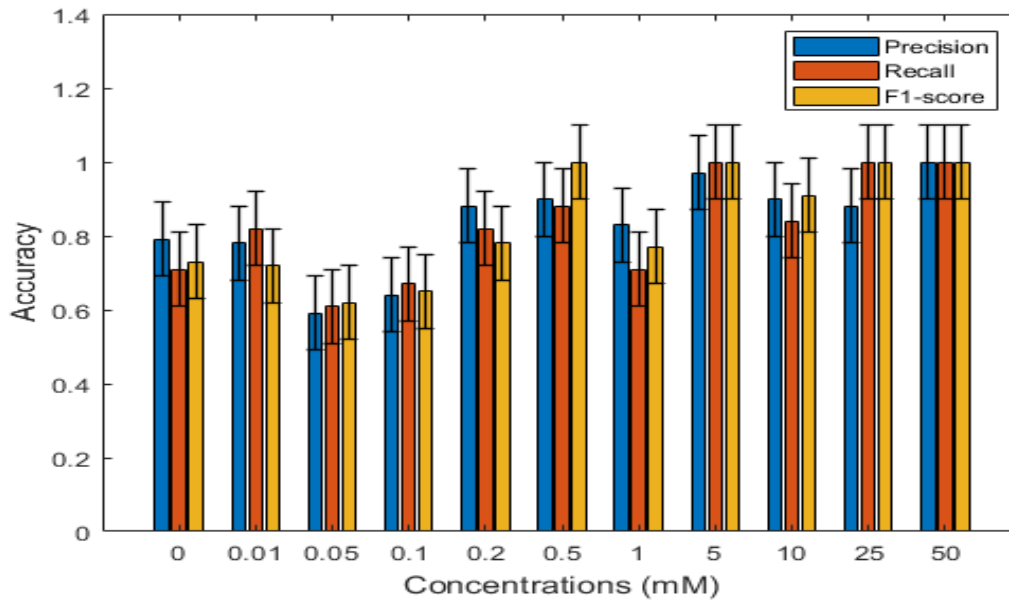


Fig. S2: Evaluation of LDA with error bars in terms of precision, recall, and F1 score at t=30 s for TMB+KI.

Table S2. Evaluation of the LDA for KI at t=30 s in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.92	0.79	0.85
0.01 mM	0.87	0.9	0.9
0.5 mM	0.93	1	0.88
1 mM	0.97	0.92	0.91
5 mM	0.94	1	1
10 mM	0.9	0.91	0.98
25 mM	1	1	1
50 mM	0.92	0.96	0.98
Average	0.93	0.94	0.94

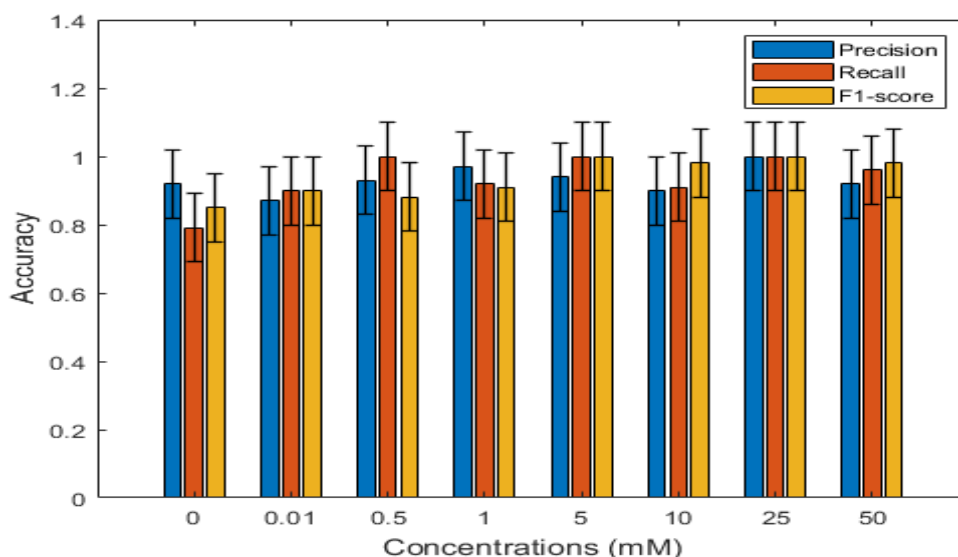


Fig. S3: Evaluation of LDA with error bars in terms of precision, recall, and F1 score at t=30 s for TMB+KI.

Table S3. Evaluation of the LDA for KI at t=10 min in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.83	0.68	0.73
0.01 mM	0.86	0.86	0.86
0.05 mM	0.77	0.86	0.81
0.1 mM	0.81	0.79	0.8
0.2 mM	0.88	0.93	0.88
0.5 mM	0.9	0.96	0.95
1 mM	0.96	0.93	0.95
5 mM	1	0.89	0.94
10 mM	0.81	0.89	0.85
25 mM	0.96	0.93	0.95
50 mM	0.9	0.93	0.91
Average	0.88	0.88	0.88

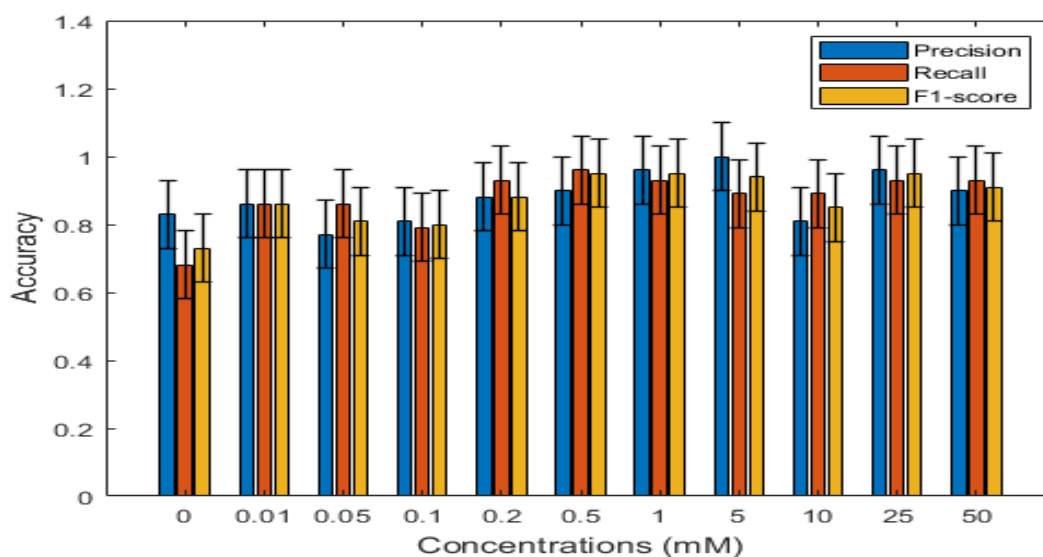


Fig. S4: Evaluation of LDA with error bars in terms of precision, recall, and F1 score at t=10 min for TMB+KI.

Table S4. Evaluation of the LDA for KI at t=10 min in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.96	0.82	0.88
0.01 mM	0.9	0.93	0.91
0.5 mM	0.93	0.96	0.95
1 mM	0.93	0.93	0.93
5 mM	1	1	1
10 mM	0.9	0.89	0.89
25 mM	0.93	0.93	0.93
50 mM	0.84	0.96	0.9
Average	0.92	0.93	0.92

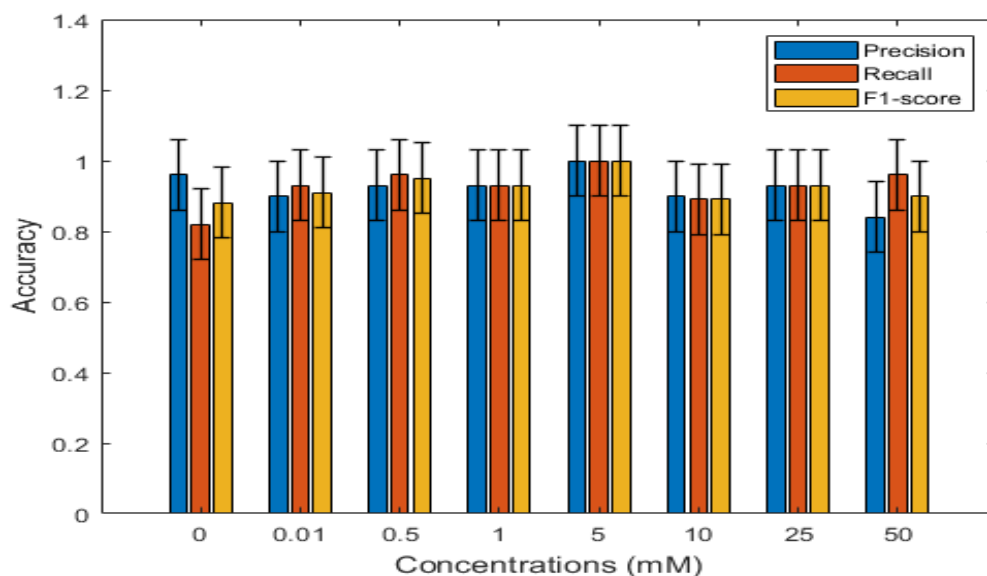


Fig. S5: Evaluation of LDA with error bars in terms of precision, recall, and F1 score at t=10 min for TMB+KI.

Table S5. Evaluation of the EBC for TMB+KI at t=30 s in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.96	0.96	0.96
0.01 mM	0.9	0.93	0.91
0.05 mM	0.96	0.93	0.95
0.1 mM	0.97	1	0.98
0.2 mM	0.96	0.96	0.96
0.5 mM	1	1	1
1 mM	0.96	0.93	0.95
5 mM	0.88	0.86	0.81
10 mM	0.85	0.92	0.86
25 mM	0.88	0.84	0.8
50 mM	0.81	0.72	0.77
Average	0.92	0.92	0.91

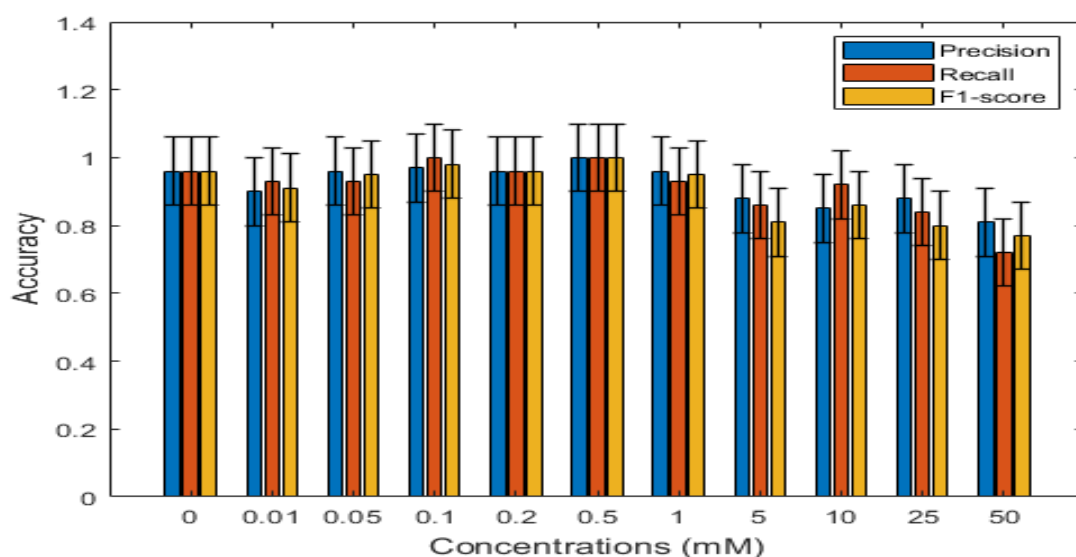


Fig. S6: Evaluation of EBC with error bars in terms of precision, recall, and F1 score at t=30 s for TMB+KI.

Table S6. Evaluation of the EBC for TMB+KI at t=30 s in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.96	0.96	0.96
0.01 mM	0.81	0.93	0.87
0.05 mM	0.96	0.82	0.88
0.1 mM	1	1	1
0.2 mM	1	1	1
0.5 mM	1	1	1
1 mM	1	1	1
5 mM	1	1	1
Average	0.97	0.96	0.96

Table S7. Evaluation of the EBC for TMB+KI at t=10 min in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.96	0.98	0.96
0.01 mM	0.86	0.86	0.86
0.05 mM	0.96	0.86	0.81
0.1 mM	0.96	0.96	0.96
0.2 mM	0.96	0.93	0.88
0.5 mM	0.96	0.96	0.95
1 mM	1	1	1
5 mM	0.7	0.74	0.78
10 mM	0.9	0.89	0.85
25 mM	0.45	0.52	0.58
50 mM	0.68	0.72	0.65
Average	0.85	0.86	0.84

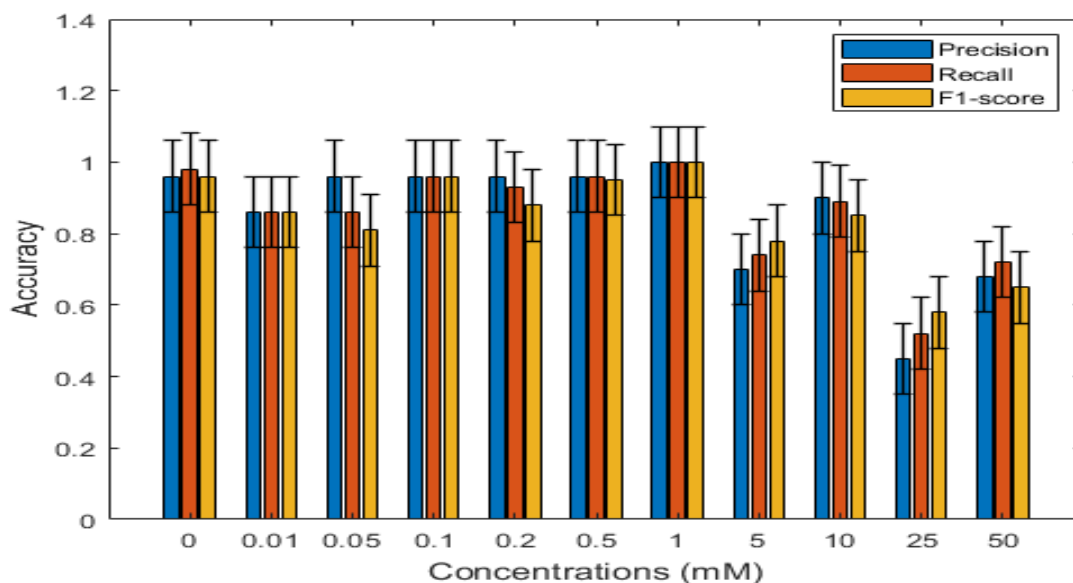


Fig. S7: Evaluation of EBC with error bars in terms of precision, recall, and F1 score at t=10 min for TMB+KI.

Table S8. Evaluation of the EBC for TMB+KI at t=10 min in terms of precision, recall and F1 score.

	precision	recall	F1-score
0 mM	0.98	0.96	0.96
0.01 mM	0.92	0.93	0.91
0.05 mM	0.92	0.89	0.91
0.1 mM	0.98	0.96	0.96
0.2 mM	0.98	0.98	0.98
0.5 mM	1	1	1
1 mM	0.94	0.93	0.93
5 mM	1	1	1
Average	0.97	0.96	0.96

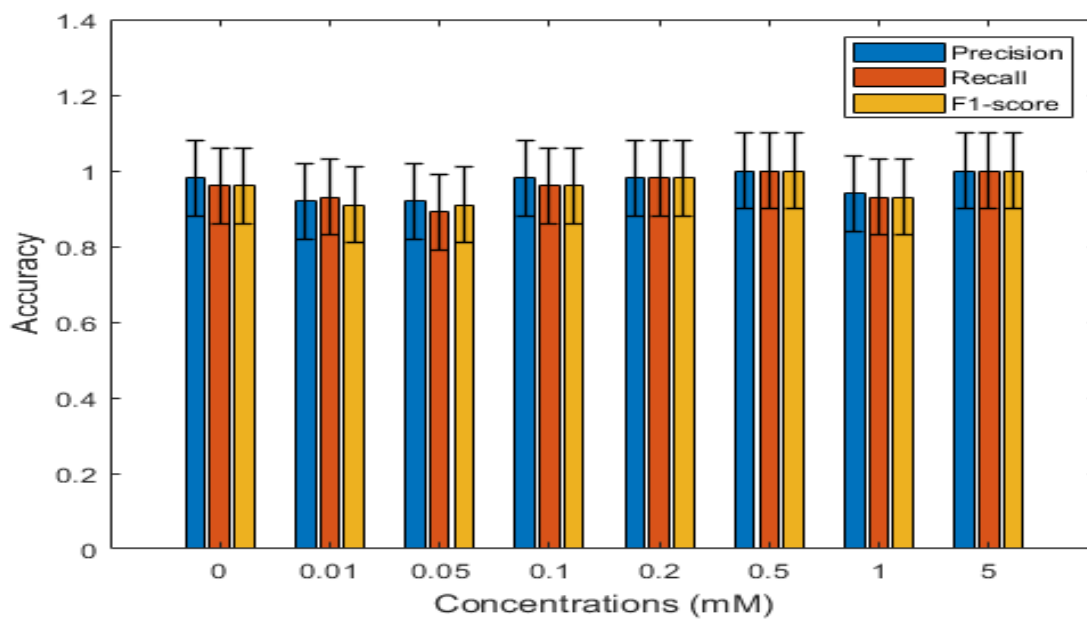


Fig. S8: Evaluation of EBC with error bars in terms of precision, recall, and F1 score at t=10 min for TMB+KI.

KI- Concentration: 0-50 mM (t=30 s)

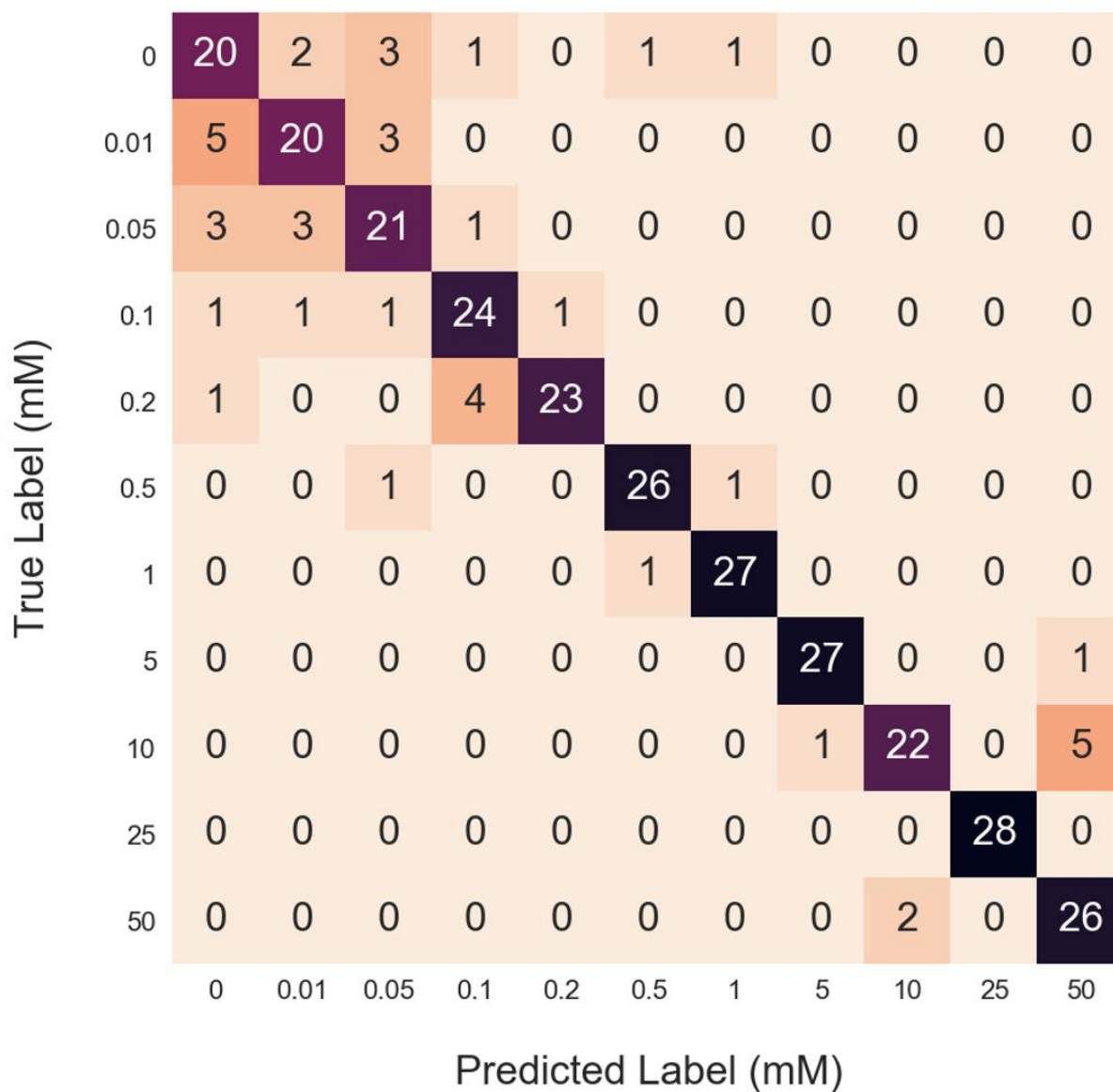


Fig. S9: Confusion matrix of KI at t=30 s for the LDA classifier including 0-50 mM concentration.

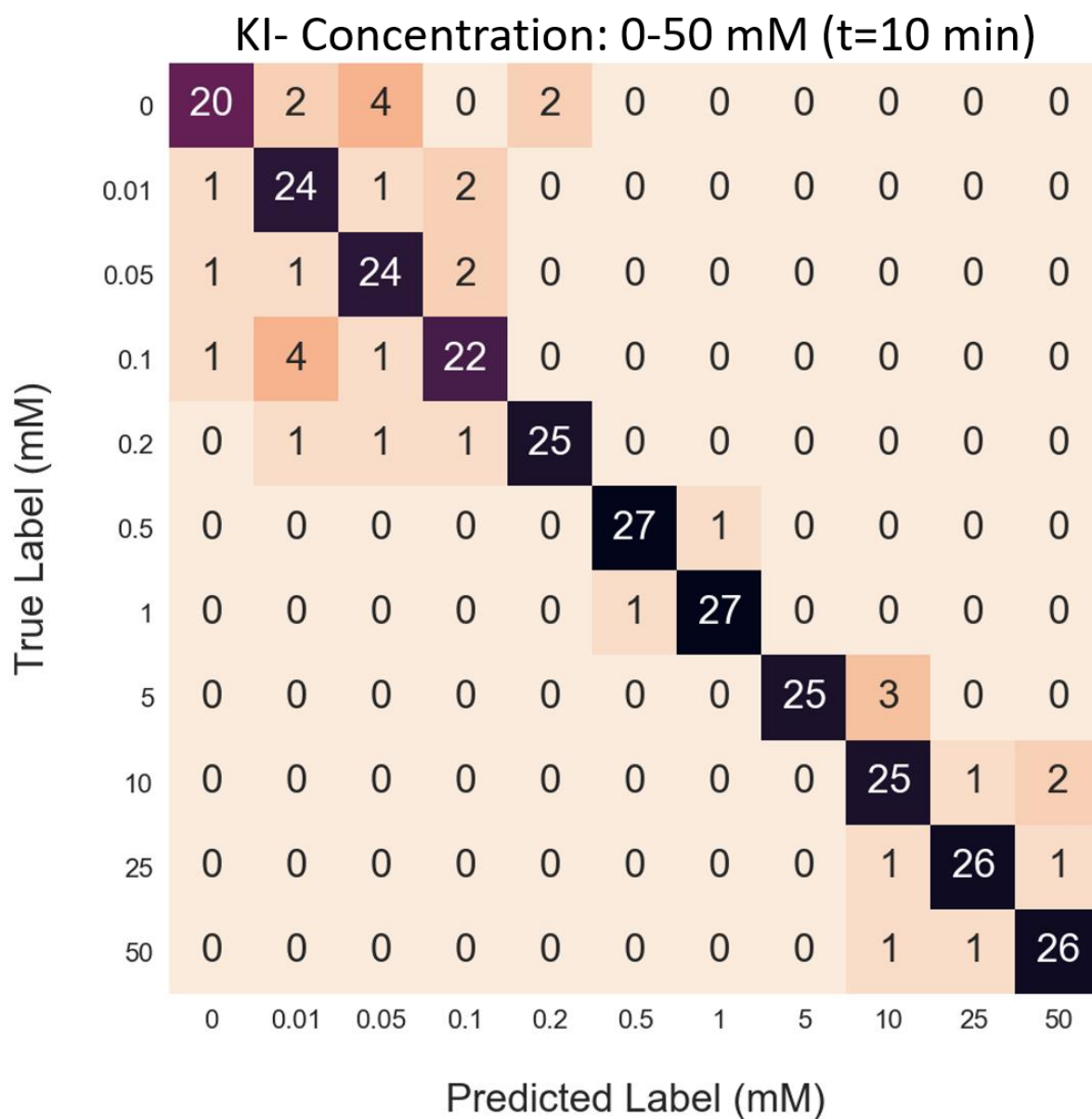


Fig. S10: Confusion matrix of KI at t=10 min for the LDA classifier including 0-50 mM concentration.

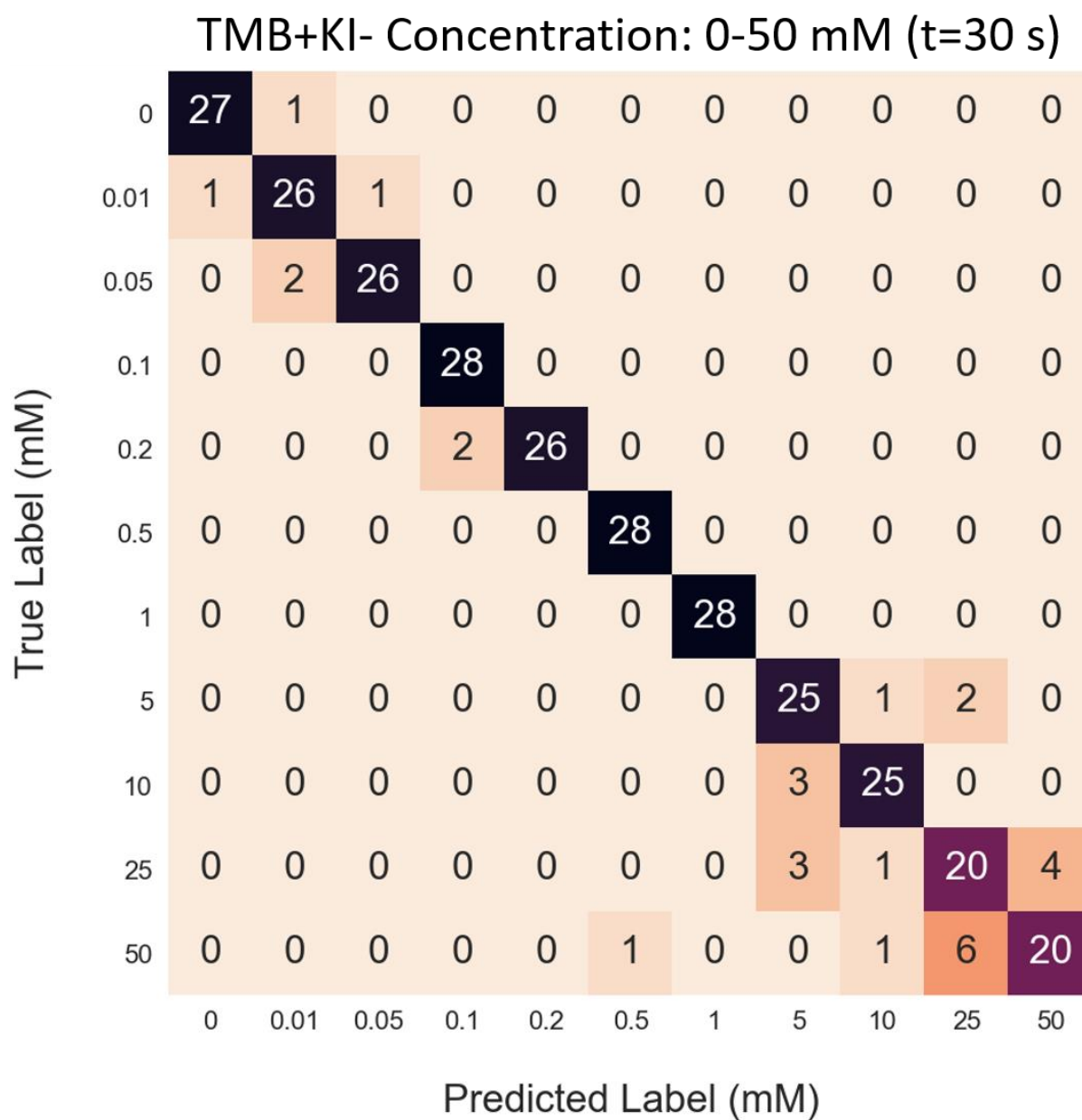


Fig. S11: Confusion matrix of TMB+KI at t=30 s for the EBC classifier including 0-50 mM concentration.

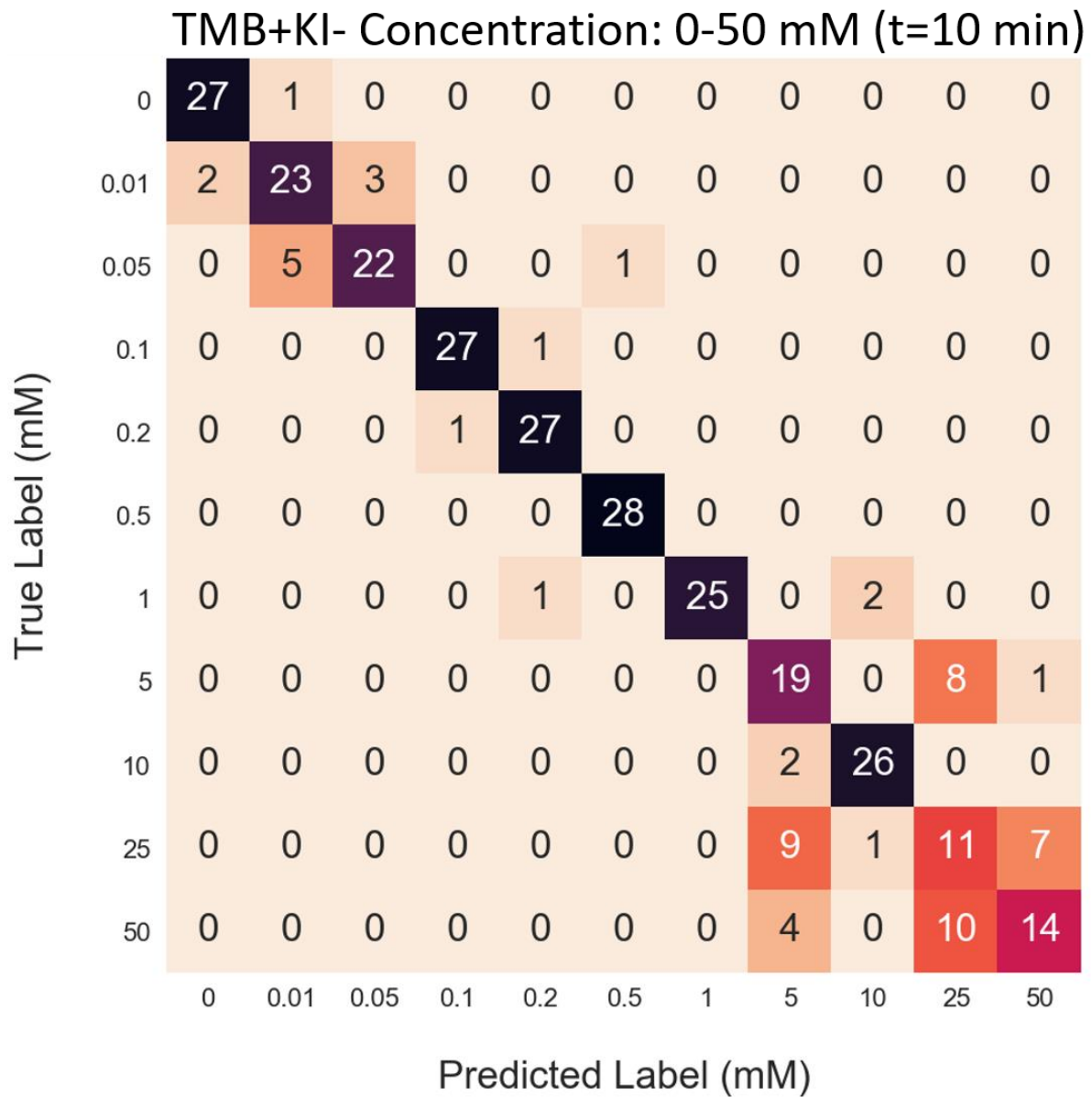


Fig. S12: Confusion matrix of TMB+KI at t=10 min for the EBC classifier including 0-50 mM concentration.