

SENSObiz® PEROXIDASE Test Kit Performance Analysis Report

EXECUTIVE SUMMARY

This document reports the performance tests of the SENSObiz® PEROXIDASE test kit on raw, pasteurized (74°C, 30 seconds), high heat-treated (90°C, 30 seconds), and UHT milk samples. The kits were tested on a total of 16 different milk samples from various breeds. Test results showed that the SENSObiz® PEROXIDASE test kits operated with **100% accuracy** on raw, pasteurized, high heat-treated, and UHT milk samples.

TEST METHOD

The raw milk samples used in the analysis were obtained from the Ankara Kızılcahamam farm of PER TARIMCILIK ve HAYVANCILIK A.Ş. During the morning milking, 50 ml samples were collected from different individuals of five breeds (Montbéliarde, Red Holstein, Black Holstein, Simmental, and Jersey) into sterile tubes, transported to the laboratory in refrigerated containers, and tested on the same day. The UHT milk samples were sourced from commercial products produced by various companies on the market. Pasteurized and high heat-treated milk samples were prepared from the obtained raw milk samples by random sampling and then heating them in the laboratory at 72 °C for 30 seconds and 90 °C for 30 seconds, respectively.

SENSObiz® ALP test kits, lot number UE-6303, were used to evaluate performance of the kits performance in different milk samples. After the kits and milk samples were brought to room temperature, the kits were immersed in the milk sample, excess milk was removed, and the kits were allowed to stand at room temperature for 10 minutes before being imaged.

RESULTS

Analyses were performed based on the results obtained after 15 minutes for all samples and compared with the expected results. For comparison purposes, the same milk samples were also run with SENSObiz® ALP kits.

The results of the study are presented in Table 1. As shown in the table, the results obtained with the SENSObiz® PEROXIDASE test kits in all milk samples are 100% consistent with the expected results. In comparative tests, the SENSObiz® ALP kits also performed 100% concordantly.

Experimental results are presented in TABLE-1, Figure 1 and Figure 2.

Table 1. Results obtained from different milk samples.

A) Raw milk samples **B)** Pasteurized milk samples **C)** High heat treated milk samples **D)** UHT milk samples

A

RAW MILK					
	MILK SAMPLE	INITIAL COLOUR	EXPECTED COLOUR	OBSERVED COLOUR	EVALUATION
MONTAFON	M1	BEJ	Toprak	Toprak	✓
	M2	BEJ	Toprak	Toprak	
	M3	BEJ	Toprak	Toprak	
	M4	BEJ	Toprak	Toprak	
BLACK HOLSTEIN	SH1	BEJ	Toprak	Toprak	✓
	SH2	BEJ	Toprak	Toprak	
	SH3	BEJ	Toprak	Toprak	
	SH4	BEJ	Toprak	Toprak	
RED HOLSTEIN	KH1	BEJ	Toprak	Toprak	✓
	KH2	BEJ	Toprak	Toprak	
	KH3	BEJ	Toprak	Toprak	
	KH4	BEJ	Toprak	Toprak	
JERSEY	J1	BEJ	Toprak	Toprak	✓
	J2	BEJ	Toprak	Toprak	
	J3	BEJ	Toprak	Toprak	
	J4	BEJ	Toprak	Toprak	
SIMANTEL	S1	BEJ	Toprak	Toprak	✓
	S2	BEJ	Toprak	Toprak	
	S3	BEJ	Toprak	Toprak	
	S4	BEJ	Toprak	Toprak	
TOTAL	16				

B

PASTEURIZED MILK (74°C, 10 sec)					
	MILK SAMPLE	INITIAL COLOUR	EXPECTED COLOUR	OBSERVED COLOUR	EVALUATION
MONTAFON	M1	BEJ	Toprak	Toprak	✓
	M2	BEJ	Toprak	Toprak	
	M3	BEJ	Toprak	Toprak	
	M4	BEJ	Toprak	Toprak	
BLACK HOLSTEIN	SH1	BEJ	Toprak	Toprak	✓
	SH2	BEJ	Toprak	Toprak	
	SH3	BEJ	Toprak	Toprak	
	SH4	BEJ	Toprak	Toprak	
RED HOLSTEIN	KH1	BEJ	Toprak	Toprak	✓
	KH2	BEJ	Toprak	Toprak	
	KH3	BEJ	Toprak	Toprak	
	KH4	BEJ	Toprak	Toprak	
JERSEY	J1	BEJ	Toprak	Toprak	✓
	J2	BEJ	Toprak	Toprak	
	J3	BEJ	Toprak	Toprak	
	J4	BEJ	Toprak	Toprak	
SIMANTEL	S1	BEJ	Toprak	Toprak	✓
	S2	BEJ	Toprak	Toprak	
	S3	BEJ	Toprak	Toprak	
	S4	BEJ	Toprak	Toprak	
TOTAL	16				

C

HEAT TREATED MILK (90°C, 30 sec)					
	MILK SAMPLE	INITIAL COLOUR	EXPECTED COLOUR	OBSERVED COLOUR	EVALUATION
MONTAFON	M1	BEJ	BEJ	BEJ	✓
	M2	BEJ	BEJ	BEJ	
	M3	BEJ	BEJ	BEJ	
	M4	BEJ	BEJ	BEJ	
BLACK HOLSTEIN	SH1	BEJ	BEJ	BEJ	✓
	SH2	BEJ	BEJ	BEJ	
	SH3	BEJ	BEJ	BEJ	
	SH4	BEJ	BEJ	BEJ	
RED HOLSTEIN	KH1	BEJ	BEJ	BEJ	✓
	KH2	BEJ	BEJ	BEJ	
	KH3	BEJ	BEJ	BEJ	
	KH4	BEJ	BEJ	BEJ	
JERSEY	J1	BEJ	BEJ	BEJ	✓
	J2	BEJ	BEJ	BEJ	
	J3	BEJ	BEJ	BEJ	
	J4	BEJ	BEJ	BEJ	
SIMANTEL	S1	BEJ	BEJ	BEJ	✓
	S2	BEJ	BEJ	BEJ	
	S3	BEJ	BEJ	BEJ	
	S4	BEJ	BEJ	BEJ	
TOTAL	16				

D

UHT MILK					
	MILK SAMPLE	INITIAL COLOUR	EXPECTED COLOUR	OBSERVED COLOUR	EVALUATION
MONTAFON	M1	BEJ	BEJ	BEJ	✓
	M2	BEJ	BEJ	BEJ	
	M3	BEJ	BEJ	BEJ	
	M4	BEJ	BEJ	BEJ	
BLACK HOLSTEIN	SH1	BEJ	BEJ	BEJ	✓
	SH2	BEJ	BEJ	BEJ	
	SH3	BEJ	BEJ	BEJ	
	SH4	BEJ	BEJ	BEJ	
RED HOLSTEIN	KH1	BEJ	BEJ	BEJ	✓
	KH2	BEJ	BEJ	BEJ	
	KH3	BEJ	BEJ	BEJ	
	KH4	BEJ	BEJ	BEJ	
JERSEY	J1	BEJ	BEJ	BEJ	✓
	J2	BEJ	BEJ	BEJ	
	J3	BEJ	BEJ	BEJ	
	J4	BEJ	BEJ	BEJ	
SIMANTEL	S1	BEJ	BEJ	BEJ	✓
	S2	BEJ	BEJ	BEJ	
	S3	BEJ	BEJ	BEJ	
	S4	BEJ	BEJ	BEJ	
TOTAL	16				

FIGURE-1. Results of analyses performed on raw milk samples from different races. Images were taken 15 minutes after milk application.

74°C

RAW MILK

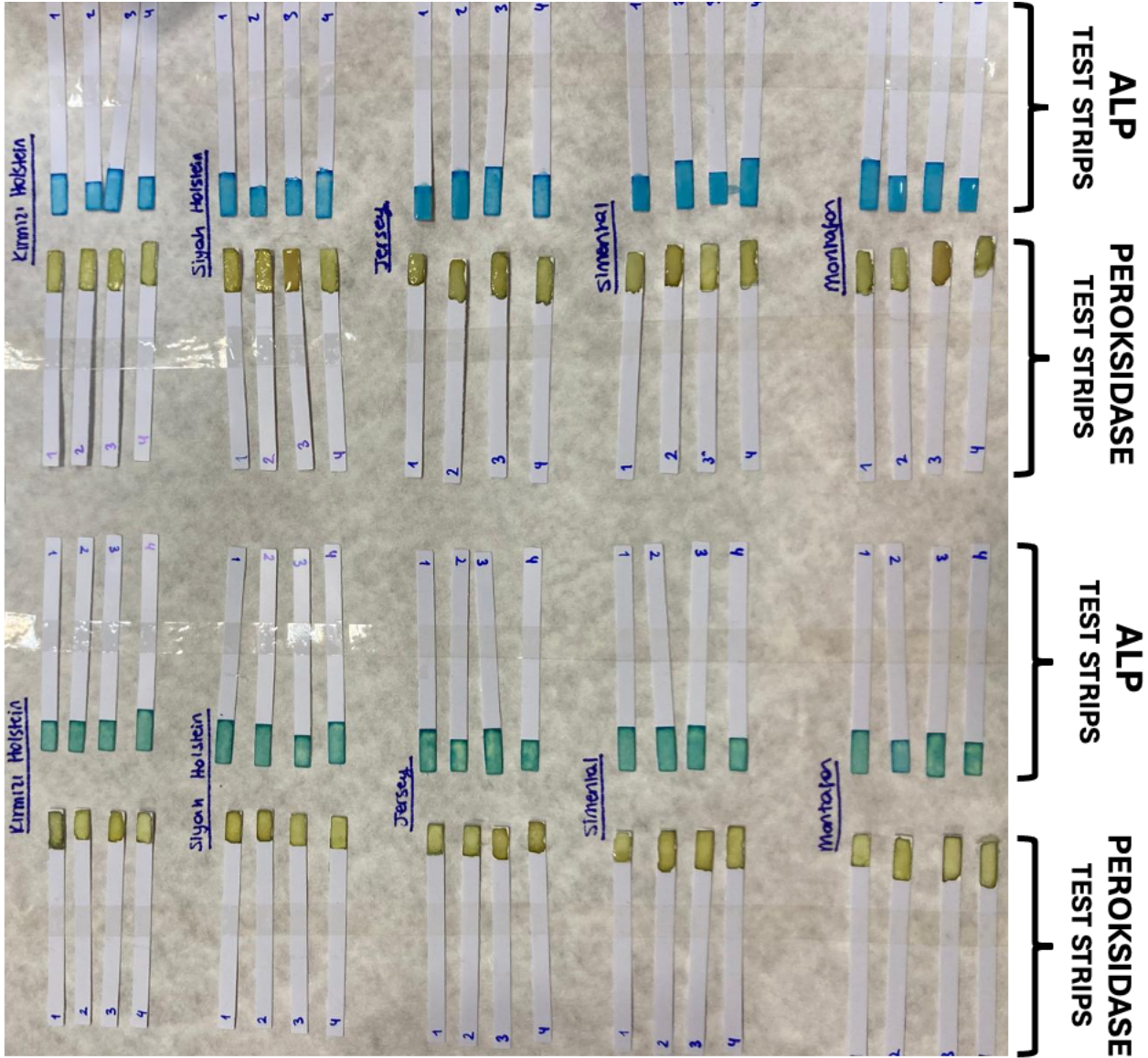
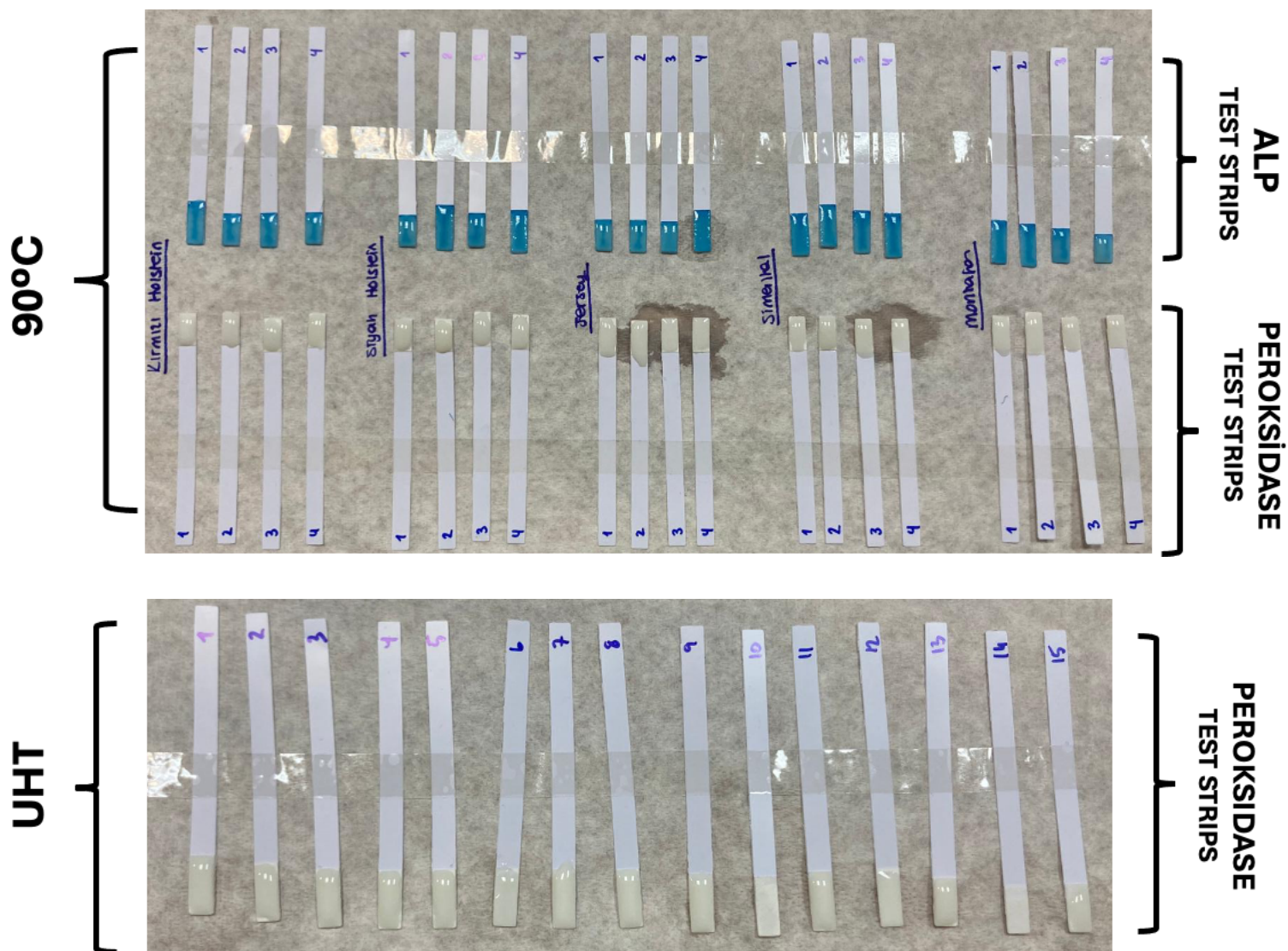


FIGURE-2. Analysis results performed with high heat treated (90°C) and UHT milk samples. Images were taken 15 minutes after milk application.



SENSObiz® PRX PERFORMANCE RESULTS

CONCLUSION:

The test results, carried out with a total of 30 samples, were evaluated in terms of the obtained and expected results.

In all 16 raw milk samples taken from five different races, the sensors changed beige to an earthy color, as expected. The color change was observed to begin within 5 minutes. After 15 minutes, the kits applied to raw and pasteurized milk in all races and individuals showed the expected positive results, changing from beige to an earthy color. Based on these findings, the kits were observed to be **100% accurate with raw and pasteurized milk**.

The kits were tested with a total of 30 samples of milk treated at high temperatures (90°C) and UHT. Because the PEROXIDASE enzyme loses its activity at these temperatures during high heat treatment (above 90°C) and UHT treatment, the kits show no color change. Analysis results indicated that none of the kits applied to high-heat treated or UHT milk showed color change. Based on these findings, it was observed that the kits yielded **100% accurate results with pasteurized and UHT milk**.

All the milk samples mentioned above were also tested with SENSObiz® ALP test strips and **100% compatible** results were obtained.

As a result of tests performed on a total of 30 different milk samples, it was determined that SENSObiz® PEROXIDASE test kits work with **100% accuracy**.