

Comparative Performance of the L-Pet Veterinary Lactate Meter and YSI 2500 Biochemistry Analyser in Equine Applications

Lactate meters are vital tools for measuring blood lactate levels, providing insights into athletic performance, metabolic health and critical care. They help monitor lactate thresholds, optimise training and aid in recovery for athletes. Clinically, they are essential for diagnosing conditions like sepsis, metabolic disorders and detecting issues such as lactic acidosis. In research, they help improve training programs and understand exercise physiology.

For sport horses, lactate meters monitor metabolic stress during training and competitions, ensuring optimal performance and preventing overexertion. They help evaluate a horse's fitness, adjust training plans and detect fatigue or insufficient recovery, ultimately improving performance, preventing injury and ensuring efficient metabolic function.

This evaluation compares the performance of the YSI 2500 Biochemistry Analyser, renowned as the Gold Standard in bio-analytical instruments for its highly accurate sensors and rapid results, with the L-Pet Veterinary Lactate Meter (Woodley Equipment Company Ltd.), a cutting-edge, portable device designed for precise and efficient lactate measurement in veterinary settings to assess the capabilities of the L-Pet Meter.

In August 2024, equine blood samples were collected from 19 horses at Wången, and lactate levels were measured using both the YSI 2500 and L-Pet Meter.

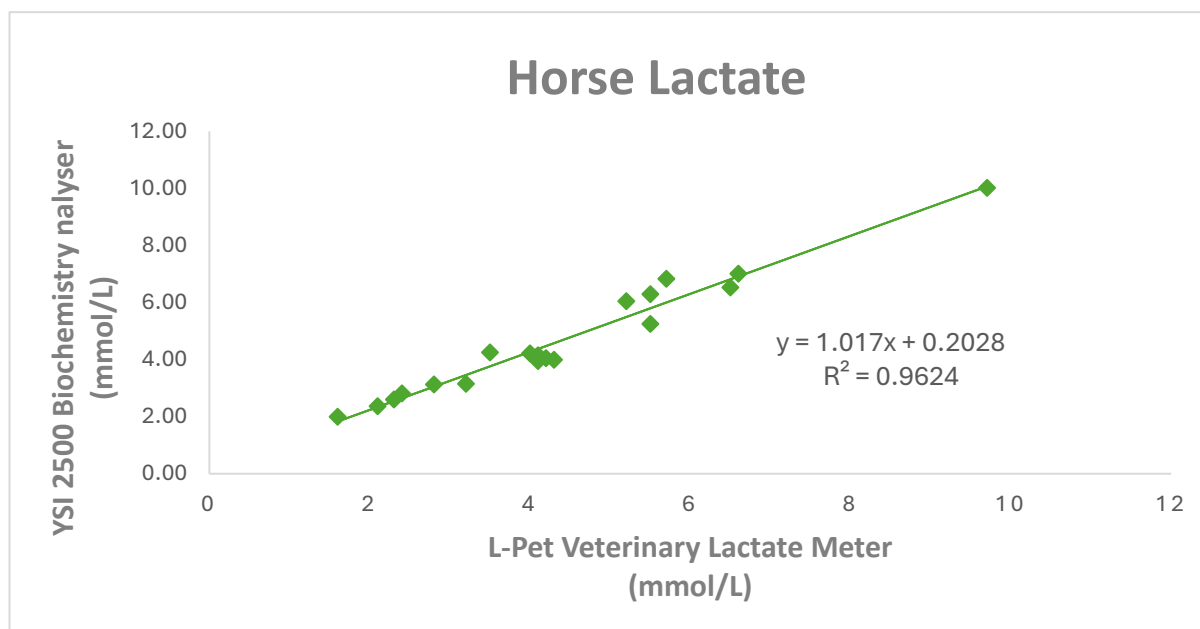
Data ≤5.0 mmol/L

	L-Pet Veterinary Lactate Meter (mmol/L)	YSI 2500 Biochemistry Analyser (mmol/L)
	1.6	1.99
	2.1	2.36
	2.3	2.60
	2.4	2.81
	2.8	3.12
	3.2	3.15
	3.5	4.25
	4	4.21
	4.1	3.94
	4.1	4.15
	4.2	4.04
	4.3	3.99
Mean	3.22	3.39
R Value ≤5.0 mmol/L	0.91	

Data ≥ 5.1 mmol/L

	L-Pet Veterinary Lactate Meter (mmol/L)	YSI 2500 Biochemistry Analyser (mmol/L)
	5.2	6.04
	5.5	5.25
	5.5	6.29
	5.7	6.82
	6.5	6.53
	6.6	7.00
	9.7	10.02
Mean	6.39	6.85
R Value ≥ 5.1 mmol/L	0.90	

Overall Data



	L-Pet Veterinary Lactate Meter (mmol/L)	YSI 2500 Biochemistry Analyser (mmol/L)
Overall Mean	4.38	4.66
Overall R Value	0.96	

Critical Lactate Thresholds

In equine medicine, lactate measurements above 4.0 mmol/L are commonly used to differentiate between moderate and high metabolic stress. The data indicates the following:

- **Lactate Values Between 4.0 – 6.5 mmol/L** – The L-Pet Meter showed minimal deviation from the YSI 2500. For example, at **4.2 mmol/L** (YSI: 4.04) and **4.3 mmol/L** (YSI: 3.99), the differences were clinically negligible.
- **Lactate Values ≥ 6.0 mmol/L** – In this higher lactate range, where accurate readings are crucial for assessing exercise-induced stress or early signs of metabolic distress, the L-Pet Meter remained within a close agreement.
- **Low Lactate Readings (≤ 2.5 mmol/L)** – At the lower end of the lactate range, the L-Pet Meter showed strong agreement with the YSI 2500, with differences staying within the expected analytical variation.

Conclusion

Overall, the L-Pet Veterinary Lactate Meter shows excellent agreement with the YSI 2500 Biochemistry Analyser, particularly around the critical 4.0 – 6.5 mmol/L range, where accurate measurements are essential for evaluating equine performance and preventing metabolic overload. The close correlation across all lactate values supports its use as a reliable, portable alternative for real-time lactate assessment in veterinary settings.

User Feedback and Practical Application

“L-Pet is used at Wangen Equestrian Centre (Sweden) and was validated in 2024 against the YSI 2500 in the Clinical Chemistry Laboratory in Uppsala. We were satisfied with our previous lactate meter, but we truly appreciate the new updated meter's functionality for sport horses. Equine welfare has many aspects. Regularly measuring workload through lactate testing in the field is one of the most important methods for optimising performance and preventing injuries.”