

# Direct Potentiometric ISE MicroSlide Technology

Providing accurate electrolyte results for improved patient management.<sup>1</sup>

**DIRECT POTENTIOMETRY UTILIZES ION-SPECIFIC ELECTRODE (ISE) MODULES FOR ELECTROLYTE ANALYSIS IN UNDILUTED SAMPLES.** Using miniaturized single-use electrodes and proven MicroSlide technology, Ortho Clinical Diagnostics has created an individual, disposable testing environment for direct ISE detection of three key electrolytes ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ ). This direct ISE detection method provides more accurate electrolyte results compared to indirect methods of testing, which contributes to improved patient management.<sup>1,2</sup>

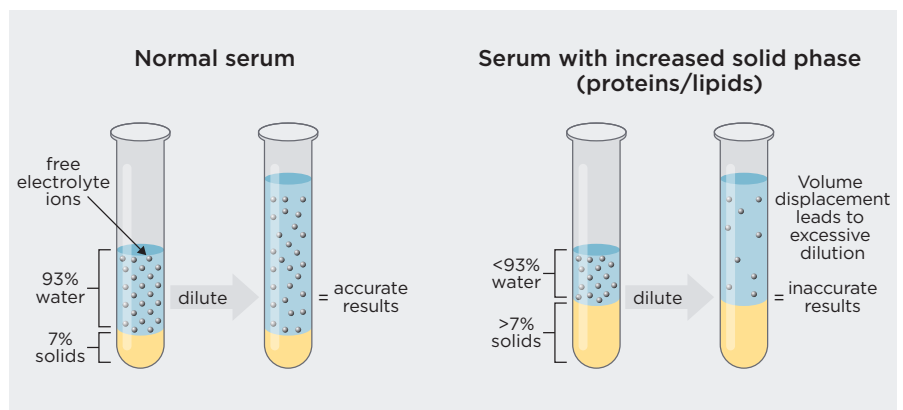
Benefits to the lab of using VITROS® direct ISEs:

- More accurate and clinically correlating electrolyte results in samples with abnormal lipid and protein levels<sup>8</sup>
- Self-contained, disposable single-use electrode
- Small sample volume
- No potential for blocked liquid reagent flow lines
- No protein build-up and no sensors to clean
- No labor and cost for electrode maintenance
- Stable calibration



How the Patient Benefits from Direct Potentiometry

- Direct ISE methods report results with more physiologically correct values<sup>1</sup>
- More accurate patient diagnosis and treatment due to noninterference of high lipid and high protein values which can be present in critically ill patients<sup>2</sup>
- Direct potentiometry methods are not impacted by the electrolyte exclusion effect — all indirect methods could yield inaccurate results for patients with high lipid and protein concentrations<sup>2-5</sup> or low protein concentrations<sup>5-7</sup>



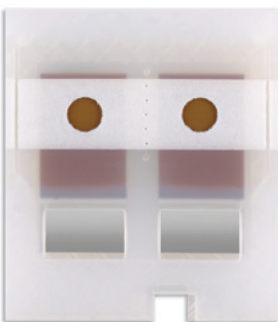
EXAMPLE OF INDIRECT ISE ELECTROLYTE EXCLUSION EFFECT

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Direct Potentiometry avoids the following potential patient misclassification and potential impact to patient management:<sup>1</sup>

Potential Patient Misclassification	True Patient Na <sup>+</sup> Level	True Patient Classification	Cause of Misclassification	Population(s) Affected	Potential Impact to Patient Management
pseudonormonatremia	too low	hyponatremia	low protein	critical care patients	under-treatment of true hyponatremia
pseudohypernatremia	normal	normonatremia	low protein	critical care patients	improper treatment for hypernatremia
pseudohyponatremia	normal	normonatremia	high protein or high lipid	multiple myeloma HIV infection severe hypertriglyceridemia severe hypercholesterolemia	improper treatment for hyponatremia
pseudonormonatremia	too high	hypernatremia	high protein or high lipid	multiple myeloma HIV infection severe hypertriglyceridemia severe hypercholesterolemia	under-treatment of true hypernatremia

## How Laboratory Productivity Benefits from Direct Potentiometry



- No electrode maintenance or cleaning resulting in labor optimization
- No protein build up eliminates cumbersome troubleshooting steps involving labor and time, plus significantly increases error potential which could potentially lead to inaccurate electrolyte values resulting in redraws and retest
- No potential for drift from unstable electrodes typical of instrument systems that employ fixed electrodes
- Up to six month calibration stability (or lot change) to minimize repetitive, time consuming recalibration thus leading to labor optimization

For more information contact your Ortho Clinical Diagnostic representative or visit our website at [orthoclinicaldiagnostics.com](http://orthoclinicaldiagnostics.com).

### References

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3. E. Chow, N. Fox, and R. Gama. Effect of low serum total protein on sodium and potassium measurement by ion selective electrodes in critically ill patients *British Journal of Biomedical Sciences* 2008 65 (3).
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