New diagnostic tool for the management of patients with sepsis: Dipeptidyl Peptidase 3 (DPP3)

- *DPP3 has been shown to be a cardiac depression factor and a marker for refractory shock*
- *DPP3 outperforms Lactate and Procalcitonin on the short-term prognosis in sepsis*
- *Changes in the DPP3 levels indicate the worsening or improving of the patient's condition*
- *DPP3 markedly guides intensivists in the management of septic patients*

Hennigsdorf/Berlin, Germany, March 23, 2021 – Diagnostics company SphingoTec GmbH ("SphingoTec") announced today the first published data (1) on the biomarker DPP3 that can predict the evolution of organ function and survival in septic patients. Measured on top of routinely used standard parameters, such as Lactate and Procalcitonin, DPP3 is an early indicator of short-term outcomes and patient severity. Sepsis is a medical emergency caused by a dysregulated host response to an infection, with mortality rates increasing rapidly for each hour that appropriate treatment is delayed (2). The rapid evolution of sepsis into its severe form, septic shock, raises the need for more precise and faster testing to support better clinical decision-making.

DPP3 is an enzyme at the core of a newly discovered disease mechanism responsible for cardiovascular depression and short-term organ failure in critically ill patients. Although intracellular DPP3 is involved in normal metabolic processes (3), massive cell death leads to DPP3 release into the bloodstream. Circulating DPP3 inactivates Angiotensin II, a hormone regulating the renin-angiotensin-aldosterone system (RAAS), which ultimately controls hemodynamics (4,5). Angiotensin II depletion leads to cardiovascular depression (6,7,9,10) and reduced vascular tone (6,8), a hemodynamic instability that quickly escalates in multiple organ failure. DPP3 was already shown to add value in various critical care settings such as cardiogenic shock (7,9) and burn shock (10).

The data from the prospective observational multi-center AdrenoOSS-1 study enrolling about 600 patients with sepsis and septic shock have shown that DPP3 levels can predict multiple short-term organ failure and the need for organ support therapies in this population (1). High or increasing DPP3 blood levels precede organ injury and predict the need for vasopressor/inotropic use, mechanical ventilation, and renal replacement therapy. DPP3 blood levels also reflect patient severity, with septic shock patients having a significantly higher DPP3 concentration than patients with severe sepsis (1,3). The study data further show that low or decreasing levels of DPP3 in the first 24 hours of ICU admission predict an improvement of organ function and better

outcomes. The dynamic nature of the biomarker can guide intensivists in the early management of septic shock patients.

Dr. Andreas Bergmann, founder of various companies, where new tools to fight sepsis mortality are developed, and CEO of critical care diagnostics company SphingoTec commented: “This newly discovered biomarker makes it easy to identify a distinct pathophysiological mechanism leading to mortality in sepsis and uncovers the etiology of clinical symptoms. The published data show that measuring DPP3 levels add value in the clinical practice by early revealing organ injury and adding information on top of standard parameters. This can help guide intensivists in the early management of septic patients.“

The in vitro diagnostic test for DPP3 is available as a microtiter plate as well as a near-patient rapid test (IB10 sphingotest® DPP3). SphingoTec has made the test available for the critical care community to further assess the clinical utility of the DPP3 biomarker in acute care settings.

References

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About SphingoTec
SphingoTec GmbH ("SphingoTec"; Hennigsdorf near Berlin, Germany) develops and markets innovative in vitro diagnostic (IVD) tests for novel and proprietary biomarkers for the diagnosis, prediction and monitoring of acute medical conditions, such as sepsis, acute heart failure, circulatory shock, and acute kidney injury in order to support patient management and provide guidance for treatment strategies. SphingoTec's proprietary biomarker portfolio includes bioactive Adrenomedullin (bio-ADM), a biomarker for real-time assessment of endothelial function in conditions like sepsis or congestive heart failure, Proenkephalin (penKid), a biomarker for real-time assessment of kidney function, and Dipeptidyl Peptidase 3 (DPP3), a biomarker for cardiac depression. IVD tests for SphingoTec's proprietary biomarkers are made available as sphingotest® microtiter plate tests as well as point-of-care tests on the Nexus IB10 immunoassay platform by SphingoTec's subsidiary Nexus Dx Inc. (San Diego, CA, USA) alongside a broad menu of established and commonly used tests for acute and critical care.
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About DPP3
sphingotest® DPP3 measures Dipeptidyl peptidase 3 an active enzyme which, when released into the blood, inactivates Angiotensin II, a hormone that is important for heart function. The depletion of Angiotensin II affects the renin-angiotensin-aldosterone system (RAAS), ultimately leading to cardiovascular depression and reduced vascular tone, a deadly combination in need of selective treatment strategies. The DPP3 release is a newly identified disease mechanism explaining short-term organ failure in critically ill patients. Early identification of DPP3 release may allow better patient stratification and earlier therapy escalation to improve outcomes.

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