

# Extracellular Vesicles derived from *Pantoea agglomerans* IG1 strain

Cat. No. LPSEV01

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## 【1】 Introduction

Exosomes secreted by cells in multicellular organisms are a type of extracellular vesicle (EV), which are attracting increasing attention due to their potential applications in pharmaceuticals and cosmetics. Research and development in these fields are progressing steadily. Similarly, unicellular microorganisms also release EVs—spherical structures ranging from 20–400 nm in diameter—that function in microbe–microbe and microbe–host communication, much like eukaryotic exosomes.<sup>1</sup> EV production is an essential function for microorganisms, and elucidating the role of bacterial EVs in intercellular communication is expected to contribute to various applications such as vaccine development, studies on intestinal microbial effects, and drug delivery systems (DDS).<sup>2</sup>

*Pantoea agglomerans* IG1 strain is a Gram-negative bacterium widely associated with plants such as wheat, rice, sweet potatoes, apples, pears, and sugarcane. It has been reported to promote plant growth by fixing nitrogen and solubilizing inorganic phosphates.<sup>3</sup> Lipopolysaccharide (LPS) is an amphipathic molecule located in the outer membrane of the cell wall in Gram-negative bacteria. It consists of a lipid component called Lipid A, a core polysaccharide, and an O-antigen polysaccharide (see Figure 1). The Lipid A portion of LPS binds to the TLR4/MD2 complex, which is mainly expressed on innate immune cells and epithelial cells. Through the adaptor protein MyD88, this interaction transduces signals to the nucleus, resulting in cellular activation.

This product contains EVs purified from the culture supernatant of *Pantoea agglomerans* IG1 strain using ultrafiltration.\*

※ This strain is an LPS-producing bacterium patented by Macrophi Inc. .  
(Japanese Patent Nos. 5511112 and 5517215).

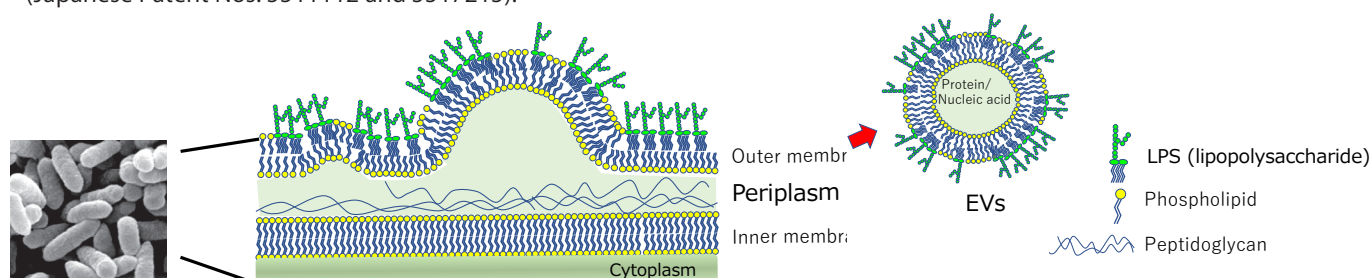


Figure 1 . Lipid bilayer structure and EV production mechanism of *Pantoea agglomerans* IG1 strain

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Cat. No.	Description	Quantity	Particle Concentration	Storage
LPSEV01	Extracellular Vesicles derived from <i>Pantoea agglomerans</i> IG1 strain	200 $\mu$ L	$> 1 \times 10^{10}$ particles/mL in PBS Filter sterilized	4°C

Note: Particle number varies by lot. Please refer to the attached CoA.

For research use only, Not for diagnostic use.  
Please read this manual thoroughly before use.

## 【II】 Usage

- Sterilized with a 0.22  $\mu\text{m}$  membrane filter.
- Dilute with appropriate buffer or medium ( $10 \times -2000 \times$ ) according to your experiment.
- Store at 4°C : use as soon as possible after opening.

## 【III】 Reference Data

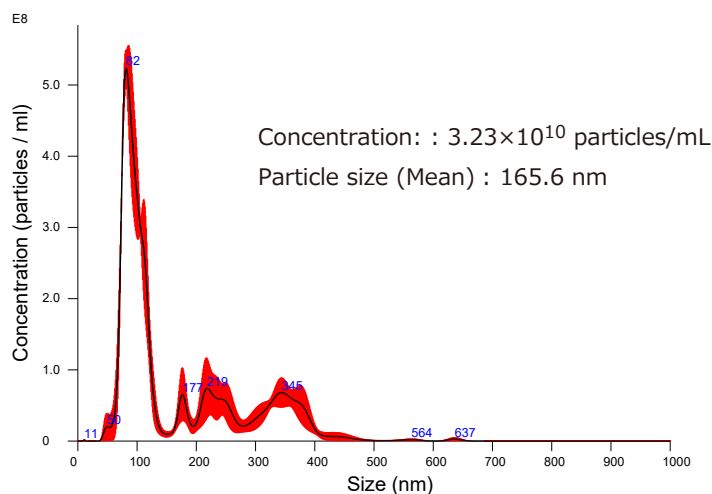


Figure 2. Example of particle size distribution of EVs derived from *Pantoea agglomerans* IG1 strain measured by NanoSight.

## 【IV】 References

1. J Dutkiewicz, B Mackiewicz, MK Lemieszek, M Golec, J Milanowski. *Pantoea agglomerans*: a mysterious bacterium of evil and good. Part IV. Beneficial effects. *Ann Agric Environ Med.* 2016;23(2):206–222
2. Nunes C, Usall J, Teixidó N, Fons E, Viñas I. Post-harvest biological control by *Pantoea agglomerans* (CPA-2) on Golden Delicious apples. *J Applied Microbiology* 92 (2): 247-255 (2002)
3. Kariluoto S, Aittamaa M, Korhola M, Salovaara H, Vahteristo L, Piironen V. Effects of yeasts and bacteria on the levels of folates in rye sourdoughs. *International Journal of Food Microbiology* 106 (2): 137-143 (2006)



COSMO BIO Co., LTD.

【JAPAN】  
TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,  
KOTO-KU. TOKYO 135-0016, JAPAN  
Phone: +81-3-5632-9610  
FAX: +81-3-5632-9619  
URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

【Outside Japan】  
2792 Loker Ave West, Suite 101  
Carlsbad, CA 92010, USA  
email: [support@cosmobiousa.com](mailto:support@cosmobiousa.com)  
URL: [www.cosmobiousa.com](http://www.cosmobiousa.com)  
Phone/FAX: (+1) 760-431-4600

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