

PRODUCT INFORMATION

BSA Metabolic Stress Reagent Set (Palmitate and Oleate BSA Complexes)

Item No. 45544

Overview and Properties

Synonyms: Bovine Serum Albumin-PA and Bovine Serum Albumin-OA, BSA-PA and BSA-OA
Supplied as: Item No. 45545: 5 mM Palmitate:0.8 mM BSA (6:1 palmitate:BSA) in 150 mM sodium chloride, pH 7.4; Item No. 45546: 5 mM Oleate:0.8 mM BSA (6:1 oleate:BSA) in 150 mM sodium chloride, pH 7.4; Item No. 45547: 0.8 mM BSA in 150 mM sodium chloride, pH 7.4
Sterility: Sterile

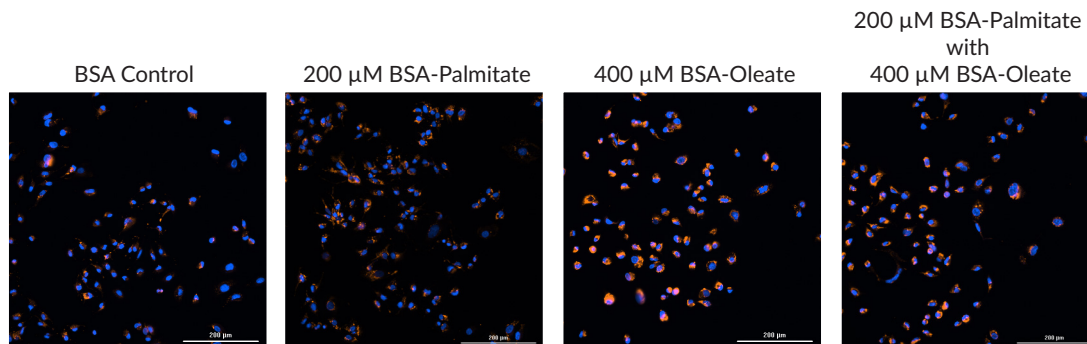
Materials Supplied

Item Number	Item Name	Quantity/Size	Storage Temperature
45545	BSA-Palmitate Complex (5 mM)	2 vials/5 ml	-20°C
45546	BSA-Oleate Complex (5 mM)	2 vials/5 ml	-20°C
45547	BSA Control (Palmitate and Oleate Complexes)	1 vial/5 ml	-20°C

Storage and Stability

Store individual components as directed in the Materials Supplied section and use before the expiration date indicated on the label.

Image



Human hepatocyte model Huh7 cells respond to fatty acid treatment *via* various metabolic pathways as well as accumulation in intracellular droplets. Accumulation of lipids in intracellular droplets can be quantified *via* microscopy using a lipid stain such as Nile Red. Delivery of lipids to tissue culture cells is readily performed without the addition of harsh solvents by using Cayman's BSA-fatty acid complexes, including materials from the BSA Metabolic Stress Reagent Set (Item No. 45544) used here. Compared to a BSA control treatment (**Left**), palmitate metabolism when present at 200 μM (**Center Left**) results in cellular stress and ~50% reduction in viable cells over a 24-hour treatment. Oleate treatment (**Center Right**) results in lipid storage without metabolic stress and has been shown to ameliorate palmitate-induced metabolic stress (**Right**).

WARNING
 THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
 This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
 Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

The BSA Metabolic Stress Reagent Set (Palmitate and Oleate BSA Complexes) contains a 5 mM solution of BSA-palmitate complex, a 5 mM BSA-oleate complex, and a fatty acid-free BSA control. BSA-Palmitate Complex (5 mM) is composed of palmitic acid (Item Nos. 10006627 | 43561) and fatty acid-free BSA at an approximately 6:1 molar ratio of palmitate:BSA. BSA-Oleate Complex (5 mM) is composed of oleic acid (Item Nos. 90260 | 24659) and fatty acid-free BSA at an approximately 6:1 molar ratio of oleate:BSA. The BSA-fatty acid complexes and BSA control were prepared at the same time with the same lot of BSA under sterile conditions, then filtered and aliquoted into sterile vials.

BSA-palmitate and BSA-oleate complexes have been used for efficient fatty acid delivery to cells in culture for the purpose of monitoring fatty acid oxidation or similar processes in various cellular metabolic studies.¹⁻³ Palmitic and oleic acid are the predominant non-esterified fatty acids in plasma but have differing effects on metabolic stress.⁴ Under conditions of visceral obesity, palmitic acid accumulates and is incorporated into complex lipids that trigger inflammatory processes leading to insulin resistance. In contrast, oleic acid can prevent palmitic acid accumulation by promoting β -oxidation of saturated fatty acids, thereby preventing the subsequent inflammation and insulin resistance. Cayman's BSA Metabolic Stress Reagent Set (Palmitate and Oleate BSA Complexes) is suitable for use in short- and long-term cell culture applications (25+ hours).

References

1. Alsabeeh, N., Chausse, B., Kakimoto, P.A., *et al.* *Biochim. Biophys. Acta Mol. Cell Biol. Lipids* **1863**(2), 143-151 (2018).
2. Wang, D., Green, M.F., McDonnell, E., *et al.* *Methods Mol. Biol.* **1077**, 241-258 (2013).
3. Bentebibel, A., Sebastián, D., Herrero, L., *et al.* *Biochemistry* **45**(14), 4339-4350 (2006).
4. Palomer, X., Pizarro-Delgado, J., Barroso, E., *et al.* *Trends Endocrinol. Metab.* **29**(3), 178-190 (2018).

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