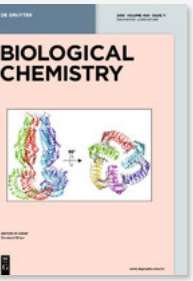

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Comparison of lipidic carrier systems for integral membrane proteins – MsbA as case study

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Abstract

Membrane protein research suffers from the drawback that detergents, which are commonly used to solubilize integral membrane proteins (IMPs), often lead to protein instability and reduced activity. Recently, lipid nanodiscs (NDs) and saposin-lipoprotein particles (Salipro) have emerged as alternative carrier systems that keep membrane proteins in a native-like lipidic solution environment and are suitable for biophysical and structural studies. Here, we systematically compare nanodiscs and Salipros with respect to long-term stability as well as activity and stability of the incorporated membrane protein using the ABC transporter MsbA as model system. Our results show that both systems are suitable for activity measurements as well as structural studies in solution. Based on our results we suggest screening of different lipids with respect to activity and stability of the incorporated IMP before performing structural studies.

Keywords: integral membrane proteins; MsbA; nanodiscs; Salipro; saposin-lipoprotein particles

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