

Expression, Purification and Functional Assay of Odorant Binding Proteins

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Abstract

Odorant binding proteins (OBPs) of vertebrates are expressed in the nasal glands and released into the mucus.¹⁾ OBPs bind the hydrophobic odorous molecules, which makes them soluble in the hydrophilic mucus, and transfer them through the aqueous mucus barrier towards the olfactory sensory neurons.²⁾ In this study, OBPs are expressed as soluble proteins, which were collected from cytosol after sonication, and purified from the supernatant employing Ni-nitrilotriacetic acid agarose affinity chromatography. The expression and purification of OBPs were confirmed by SDS-PAGE and western blot method. A quartz crystal microbalance (QCM) can measure the amount of the bound molecules in nanogram scale by detecting the difference in resonance frequency caused by the piezoelectric effect. To evaluate the binding activity of OBPs, we checked whether the QCM coated with OBPs could be used as detector and classifier of distinct classes of odorous compounds.

References

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