

INTISARI

Fabrikasi Membran Lipid *Methyltrioctylammonium Chloride* dengan *Bis(2-ethylhexyl) Phosphate* dan Potensinya sebagai Sensor Rasa umami

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Pada penelitian ini telah berhasil difabrikasi sensor rasa umami berbasis membran lipid *methyltrioctylammonium chloride* (TOMA) dengan *bis(2-ethylhexyl) phosphate* (PAEE) menggunakan perbandingan rasio molar 6:4. Kombinasi TOMA dan PAEE dipilih sebagai penyusun membran lipid karena terkonfirmasi memiliki respon tinggi terhadap keberadaan senyawa MSG. Sensor berbasis membran lipid diujikan pada variasi konsentrasi MSG (0,0001 - 0,01) M. Sensor ini memiliki sensitivitas terhadap analit MSG sebesar (49 ± 5) mV/dekade dengan linearitas 0,965. Sensor ini juga memiliki batas deteksi (LOD) sebesar $1,8 \times 10^{-3}$ M dan batas kuantifikasi (LOQ) 6×10^{-3} M terhadap analit MSG. Sensor ini juga memiliki stabilitas tinggi setelah dilakukan uji coba pengukuran dimulai dari hari ke-1 hingga hari ke-30 dengan nilai respon terhadap analit MSG yang cukup konsisten. Sensor TOMA:PAEE terkonfirmasi memiliki selektivitas yang lebih tinggi terhadap senyawa rasa umami pada MSG jika dibandingkan dengan senyawa rasa asam (HCl), asin (NaCl) dan pahit (quinine HCl) serta senyawa rasa manis pada sukrosa. Sensor ini teruji kemampuannya untuk mengukur dan membedakan pola intensitas rasa umami antara produk penyedap rasa komersial (100% MSG) dan produk penyedap rasa campuran MSG (kaldu bubuk).

Kata kunci : Lipid, sensor rasa, umami, penyedap rasa

ABSTRACT

Fabrication Of Methyltrioctylammonium Chloride Lipid Membrane With Bis(2-Ethylhexyl) Phosphate And Its Potential As An Umami Taste Sensor

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In this research, an umami taste sensor based on a lipid membrane composed of methyltrioctylammonium chloride (TOMA) and bis(2-ethylhexyl) phosphate (PAEE) in a molar ratio of 6:4 was successfully fabricated. The combination of TOMA and PAEE was chosen as the lipid membrane constituents due to their confirmed high responsiveness to the presence of MSG (Monosodium Glutamate). The lipid membrane-based sensor was tested across a range of MSG concentrations (0.0001 - 0.01 M). The sensor exhibited a sensitivity of (49 ± 5) mV/decade to the MSG analyte with a linearity of 0.965. It also demonstrated a limit of detection (LOD) of $1,8 \times 10^{-3}$ M and a limit of quantification (LOQ) of 6×10^{-3} M for MSG. The sensor performed high stability during measurement testing, spanning from day 1 to day 30, with consistent response values to the MSG analyte. The TOMA:PAEE sensor was confirmed to possess higher selectivity toward umami taste compounds in MSG compared to other taste compounds such as acid (HCl), saltiness (NaCl), bitterness (quinine HCl), and sweetness (sucrose). The sensor demonstrated its ability to measure and differentiate the intensity of umami taste profiles between commercial flavor enhancers (100% MSG) and mixed flavor enhancers containing MSG (such as bouillon powder).

Keywords : *Lipid, taste sensor, umami, flavor enhancer*