

## Distribusi residu insektisida organoklor dan organofosfat pada tanah sawah, air sawah, dan beras karawang, serta produk olahan beras karawang, Jakarta dan Bogor

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### Abstrak

Residu insektisida organoklor (lindan, aldrin, dieldrin, heptaklor dan endosulfan) dan organofosfat (klorpirifos, propenofos, diazinon dan malation) telah diteliti terhadap sampel tanah, air, beras dari enam desa di Karawang dan produk olahan beras dari dua belas pasar tradisional di Karawang, Jakarta dan Bogor. Metode analisis residu insektisida berdasarkan pada kromatografi gas-cair dengan detektor penangkap elektron. Dari total sembilan jenis insektisida yang diuji, seluruhnya terdeteksi pada sampel dengan konsentrasi berkisar dari tak terdeteksi sampai 101,2 ng/g. Frekuensi deteksi residu berkisar dari 3,1% (3 sampel) sampai 86% (84 sampel). Lindan merupakan yang paling banyak terdeteksi diikuti klorpirifos (52,0%; 51 sampel) dan aldrin (51,0%; 50 sampel). Sebanyak 15,71% (11 sampel) produk beras yang berasal dari Bogor yaitu jenis nasi (2 sampel), bubur (1 sampel) buras (2 sampel), lemper (2 sampel), ketupat (1 sampel) dan lontong (3 sampel) tercemar aldrin melebihi batas maksimum residu yang dihitung dari ADI (Acceptable Daily Intake). Nilai EDI (Estimated Daily Intake) buras, lemper dan lontong berturut-turut  $23,52 \times 10^{-6}$ ;  $12,44 \times 10^{-6}$ ; dan  $15,35 \times 10^{-6}$  mg/kg berat badan per hari dengan pencapaian ADI berturut-turut 235,2; 124,4 dan 153,5% sehingga beresiko terhadap kesehatan konsumen. Konsumsi maksimal produk beras ini yang masih aman adalah 2 buras, 4 lemper dan 192,99 miligram lontong. Sedangkan sampel tanah, air, beras dan produk beras lainnya masih aman

.....The residue levels of organochlorine insecticides (lindane, aldrin, dieldrin, heptachlor and endosulfan) and organophosphorus insecticides (chlorpyrifos, propenofos, diazinon and malathion) were determined in soil, water and rice from six villages in Karawang and rice products from twelve traditional markets around Karawang, Jakarta and Bogor. The method for monitoring these residues based on gas-liquid chromatography with electron capture detector. All of the nine organochlorine and organophosphorus insecticides investigated, were detected at concentration ranging from nondetectable to 101,2 nanogram/gram. Frequencies of detection of insecticides residues ranged from 3,1% (3 samples) to 86% (84 samples). Lindane was the most frequently detected followed by chlorpyrifos (52,0%; 51 samples) and aldrin (51,0%, 50 samples). A total of 15,71% (11 samples) rice products from Bogor such as rice (2 samples), bubur (1 sample), buras (2

samples), lemper (2 samples), ketupat (1 sample) and lontong (3 samples) contained aldrin exceeded Maximum Residue Limits (MRLs) determined from Acceptable Daily Intake. The EDIs (Estimated Daily Intakes) of aldrin for buras, lemper, and lontong were  $23,52 \times 10^{-3}$ ;  $12,44 \times 10^{-3}$ ;  $15,35 \times 10^{-3}$  mg/kg body weight/day, respectively. These EDIs have exceeded ADI, were 235,2 % (buras), 124,4 % (lemper); 153,5 % (lontong). Therefore, consumption of these foods poses a risk to consumer health. Based on ADI achieved, maximum rice products consumption that will not pose a risk to consumer health for buras, lemper and lontong are 2, 4 and 192,99 miligram, respectively. The rest samples such as water, soil, rice and other rice products were in safe level.