Kadar cemaran Pb pada anggur di kios buah : studi kasus di Jl. Inspeksi Saluran Kali Malang, Jakarta Timur

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Abstrak

ABSTRAK
Selama tahun 1984 hingga 1995 jumlah kendaraan di Jakarta meningkat dua setengah kali lipat, dari 1.213.352 kendaraan pada tahun 1984 menjadi 3.021.136 pada tahun 1995 (BPS, 1987; 1991 & 1991). Berdasarkan pemantauan BAPEDAL (World Bank, 1994), sekitar 85 % timbal di udara berasal dari lalu lintas kendaraan bensin yang menggunakan timbal (Pb). Laporan World Bank (1994), menunjukkan dari indikator kualitas udara pencemar di daerah perkotaan padat lalu lintas, telah melebihi baku mutu ambien nasional, yaitu timbal, belerang dioksida, dan nitrogen oksida.

Timbal adalah bahan beracun yang dapat mengganggu kesehatan manusia, untuk melindungi kesehatan masyarakat, Departemen Kesehatan Republik Indonesia menetapkan kandungan timbal maksimum pada buah dan olahannya sebesar 2,0 mg/kg.Di Jakarta banyak penjual buah-buahan di kios tepi jalan yang berjarak 3-5 meter dari jalan raya. Partikulat gas buang kendaraan yang mengandung timbal lepas ke udara, akan mencemari lingkungan sekitarnya termasuk kios buah beserta buah-buahan dagangannya. Umumnya, penjual tidak menutup buah-buahan dagangannya, sehingga debu udara yang bercampur partikulat timbal gas buang akan mudah mencemarinya.

Tujuan penelitian ini adalah:
1. Mengetahui pengaruh lama pemaparan buah anggur di kios buah tepi JI. Inspeksi Saluran Kali Malang, Jakarta Timur terhadap kadar cemaran timbal yang diduga dari gas buang kendaraan bermotor.
2. Mengetahui seberapa jauh pengurangan kadar timbal pada buah anggur tercemar dengan pencucian air.

Hipotesis penelitian adalah sebagai berikut:
1. Semakin lama buah anggur dijajakan terbuka di kios buah tepi J1. Inspeksi Saluran Kali Malang, Jakarta Timur, akan semakin tinggi kadar timbalnya.
2. Pencucian pada buah anggur terpapar, akan menurunkan kadar timbal cemaran timbal.

Dalam penelitian ini, digunakan desain Rancangan Acak Lengkap (RAL) untuk perlakuan pemaparan anggur selama 5 hari, setiap hari mulai pukul 06.00 hingga pukul 24.00 WIB; analisis statistik regresi linier sederhana untuk mengetahui kecenderungan lama waktu pamaparan anggur terhadap kadar timbal; digunakan hipotesis Uji F (o,05) untuk menguji apakah ada beda perlakuan pemaparan pada buah anggur antar waktu. Untuk percobaan pengurangan kadar timbal anggur hari ke 5 dengan tiga cara pencucian juga digunakan RAL, digunakan Uji-t (0.05) untuk mengetahui apakah ada beda nyata antar masing-masing perlakuan pencucian. Pengujian kadar Pb dengan metode Atomic Absorption Spectrophotometer (AAS) di laboratorium DNA Rekombinan MTP, Balai Penelitian Bioteknologi Tanaman Pangan, Departemen

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Hasil pengujian kadar Pb sampel anggur percobaan dan hasil analisis statistik dilakukan dengan menggunakan program Microsoft Excel, adalah sebagai berikut:
1. Rata-rata kadar timbal pada buah anggur yang dipaparkanldipajang di salah satu kios buah JI. Inspeksi Saluran Kali Malang Jakarta Timur dari hari ke 1 hingga hari ke 5 berturut-turut 2,60 ppm; 3,41 ppm; 3,82 ppm; 3,99 ppm; dan 4,18 ppm.
2. Diperoleh persamaan garis regresi Y = 1,5218 + 0,4993 X yang menunjukkan hubungan positip.
3. Penggunaan Uji F dengan tingkat kepercayaan 0,05 terhadap kadar Pb pada anggur karena efek lama pemaparan selama lima hari, diperoleh hasil F hitung 188,4051 > F tabel 5.12 3,1058, maka Ho ditolak, dapat disimpulkan ada perbedaan kadar Pb pada anggur karena perlakuan waktu pemaparan.
4. Uji t untuk data berpasangan, menggunakan tingkat kepercayaan 0,05 terhadap rata-rata kadar Pb pada anggur had ke 5 Vs kadar Pb pada anggur hari ke 5 yang mendapat tiga perlakuan pencucian, diperoleh kesimpulan tidak ada perbedaan rata-rata kadar Pb anggur hari ke 5 setelah dicuci air satu per satu Vs anggur hari ke 5 yang dicuci dengan air mengalir. Sedangkan perlakuan perendaman terhadap kedua perlakuan pencucian lainnya berbeda nyata.

Berdasarkan hasil penelitian, dapat diambil kesimpulan:
Semakin lama buah anggur dijajakan secara terbuka (lebih dari l8 jam) di kios tepi jalan raga, kadar cemaran timbalnya semakin tinggi sehingga melebihi peraturan Departemen Kesehatan Republik Indonesia.
Pencucian dengan air dapat mengurangi kadar timbal pada buah anggur tercemar. Kadar Pb yang tinggi pada buah anggur tersebut, merupakan indikator telah terjadi pencemaran Pb pada bahan pangan yang dijual di tepi jalan.

Disarankan agar diberikan penyuluhan kepada pedagang buah, mengenai cara penjualan yang dapat mencegah cemaran timbal dari udara sekaligus memperpanjang masa simpan; kepada pembeli dianjurkan memilih anggur yang relatif segar dan mencucinya sebelum dimakan. Pemerintah agar mengurangi penggunaan bensin kadar timbal tinggi dan kemungkinan penerapan pajak untuk bahan bakar yang potensial mencemari udara, serta membangun sistem angkutan masal.
<hr><i>ABSTRACT
During the first decades of 1980s and 1990s, especially between 1984 and 1996, the number of vehicle in Jakarta had increased about twice and a half, i.e. from 1,213,352 to 3,444,095. Based on BAPEDAL monitoring in 1991, it showed that 85% of lead toxic substance in the air pollution was brought about by the ever more heavy traffic on most of the roads and streets. World Bank reports (1994), showed that the indicators of air pollution quality in the traffic areas had reached more than the national ambient standard, including such substances as sulphur oxide, nitrogen oxide, lead, and so on.

Lead (Pb) is a toxic substance that recognized as health hazard for humans. In this regard, to protect from lead contamination, the Indonesian Government had decided to set up regulation on lead contained in fruits and its processing. It should be lower than 2.0 mg/kg.

In Jakarta, there are lots of fruit-stalls on the sidewalks of the back streets, the distance of which is less than

3 to 5m from the street ways. Lead release coming out from the car exhausts will mix up with the dust flying in the air and spread all over the places, including the fruit-stalls found at the sidewalks. Commonly, the fruits, including the grapes, are freely open or at least not properly wrapped up in plastic papers for hours, so that they tend to be easily reached by the dust blown out of the exhaust gas of the busy traffic on the street sides. The result is that any harmful substances like lead will easily contaminate the grapes and other fruits at the stalls.

The purpose this research as follows:
How much would the impact of the length exposure be on the probable level of lead accumulation in grapes sold at the sidewalk fruit stalls on JI. Inspeksi Saluran Kali Malang, Jakarta Timur? Would the washing up of the grapes with water significantly reduce the probable lead contaminant in them?

The hypotheses based on the problems above can. be formulated as follows:
The longer the exposure of the grapes as displayed at the sidewalk fruit stalls on JI. Inspeksi Saluran-Kalimalang, Jakarta Timur the higher the level of lead accumulation will be.

The washing up of the grapes displayed as such will significantly reduce the level of lead contaminant.
In order to provide an objective account for the tendency of the length of exposure that causes the probable lead contamination upon grapes on the spot, a linear regression statistic analysis was used. The data gathered for the purpose were taken out through a random sampling of the experimented grapes, sold at the stalls during the 1st day up to the 5th day of exposure. Whereas to get the answer to the question whether or not

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Conclusion:
The longer the exposure of the grapes as displayed at the sidewalk fruit stalls (longer than 18 hours), the higher the level of lead accumulation will be over the standard maximum tolerable of the Department of Health. The way of washing the grapes diminish the level of lead contaminant. The high lead level in grapes is an indicator of air pollution into the foods sold at the road side.

Recommendation:
It is suggested that guidance be given to the grape sellers at the sidewalk stalls on the way exposing the grapes sold in order to avoid probable lead contaminant caused by air pollution as well as to prolong shelf life; it is recommended that the grape consumers choose fresher grapes as for as possible and wash them up before consuming_ It is also hope that the Government would phase out any remaining of lead additives in gasoline and the possibility of the applying the tax for gasoline of air pollution potency, and developing mass transportation.</i>