

Total glutathione (GSH) pada masyarakat terpajan merkuri di kawasan pertambangan emas skala kecil (PESK) Desa Lebak Situ, Kabupaten Lebak, Banten = Total glutathione (GSH) in community exposed to mercury at artisanal small scale gold mining asgm in Lebak Situ Village Lebak Regency Banten

Sifa Fauzia, author

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Abstrak

Pertambangan Emas Skala Kecil (PESK) di Indonesia menjadi salah satu usaha memperbaiki situasi ekonomi masyarakat di beberapa daerah. Namun, merkuri (Hg) yang digunakan untuk mengekstrak emas langsung dibuang ke lingkungan, sehingga menimbulkan bahaya bagi kesehatan. Banyak penelitian menunjukkan pajanan Hg mengurangi tingkat antioksidan tubuh. Glutathione (GSH) adalah salah satu antioksidan alami tubuh yang penting karena bertindak sebagai salah satu faktor detoksifikasi Hg. Penelitian ini bertujuan menentukan hubungan antara kadar merkuri dan total GSH dengan karakteristik individu masyarakat di wilayah PESK Desa Lebaksitu. Desain studi yang digunakan adalah cross-sectional. Kadar merkuri dan total GSH diukur dalam darah. Hubungan antara merkuri, total GSH, dan karakteristik individu (usia, jenis kelamin, status merokok, aktivitas fisik, dan indeks massa tubuh) diuji menggunakan model regresi, korelasi, dan independen t-Test. Rata-rata merkuri darah $11,09 \pm 10,6$ g/L, lebih tinggi dari batas US EPA. Ratarata total GSH $0,874 \pm 0,123$ g/mL.

Di antara hubungan total GSH dengan karakteristik individu, hanya aktivitas fisik yang memiliki hubungan signifikan ($p = 0,021$; 95% CI -0,127 - 0,01). Responden dengan kadar merkuri darah $>5,8$ g/L memiliki risiko 2,431 kali lebih tinggi untuk memiliki total GSH $<0,874$ g/mL dibandingkan responden dengan kadar merkuri darah $<5,8$ g/L. Setiap kenaikan kadar merkuri darah sebesar 1 g/L dapat menurunkan total GSH sebanyak 0,002 g/mL setelah dikontrol usia, IMT, dan aktivitas fisik. Diperlukan upaya menyeluruh dari instansi lintas sektor untuk mengurangi penggunaan merkuri dan dampaknya terhadap kesehatan masyarakat di sekitar PESK.

Artisanal and Small-scale Gold Mining (ASGM) in Indonesia has been an attempt to improve economic situation in some poor areas. However, the mercury (Hg) used to extract gold from ore is discharge into the environment, where it poses a hazard for human health. Many researches have shown that Hg exposure reduced antioxidant level in human body. Glutathione (GSH) is one of the important antioxidant which can act as detoxification factor for heavy metals.

This research is aimed to determine the association between mercury levels and total GSH plasma along with individual characteristics from community related to ASGM in Lebaksitu Village. This study used cross-sectional design with 69 samples. Mercury levels was measured in whole blood and total GSH was measured in plasma. Association between blood mercury, total GSH, and individual characteristics (age, gender, smoking status, physical activity, and body mass index) were examined using multiple regression models, correlate and independent t-Test method. Mean blood mercury was found $11,09 \pm 10,6$ g/L which is higher than US EPA limit. The average of total GSH was $0,874$ g/mL $\pm 0,123$ g/mL (mean \pm SD).

Among others individual characteristic, only physical activities which has significant relationship with total GSH with p-value 0,021 (95% CI -0,127 - 0,01). Participants with high mercury blood levels can be at risk

2,431 times higher to have total GSH <0,874 g/mL. Any increase in mercury blood by 1 g/L can reduced total GSH by 0,002 g/mL after controlled by age, body mass index, and physical activity. It would be required overall effort from agencies across sectors to reduce the use of mercury and health exposure in community around ASGM.</i>