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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH

Judul Artikel Ilmiah : **The Relationship between Pesticide Exposure and Umbilical Serum IGF-1 Levels and Low-birth Weight: A Case-control Study in Brebes, Indonesia.**
Nama semua penulis : Sigit Ambar Widyawati, **Suhartono**, Maria Mexitalia, Ariawan Soejoenoes.
Status Pengusul (coret yg tidak perlu) : ~~Penulis Utama/ Penulis Utama & Korespondensi/ Penulis Korespondensi/ Penulis Anggota~~

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J Nama Jurnal : **The International Journal of Occupational and Environmental Medicine (The IJOEM)**
J Tahun terbit/Vol/No/halaman : 2020/Volume 11 Nomor 1/Hal.15-23
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J DOI : [10.15171/ijoem.2020.1809](https://doi.org/10.15171/ijoem.2020.1809)
J Alamat WEB Jurnal/ Proceeding : <https://doc-pak.undip.ac.id/2649/1/informasi%20artikel.pdf>
J Terindex di : MEDLINE (Index Medicus); Clarivate Analytics (formerly ISI) Web of Science, and Web of Knowledge; Scopus; EMBASE/Excerpta Medica; EBSCO; CINAHL; CAB Abstracts; Global Health; ISC; HINARI; Ulrichs Global Serials Directory; DOAJ; and Index Medicus for the EMR; archived by PubMed Central (PMC).

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c	Kecukupan dan kemutahiran data/informasi dan metodologi	Material and method lengkap dari populasi, sampel, alur penelitian variable dan interpretasi termasuk etika penelitian.
d	Kelengkapan unsur dan kualitas jurnal	Grammar errors (++), figure 1 tidak jelas dimasukkan dipaper tujuannya apa dan daftar ROC/cut off diuraikan untuk memerintah kadar IRF dan dipakai untuk diuraikan selanjutnya.

Semarang, 13 April 2020
Reviewer 1



Prof. Dr. dr. Tri Indah Winarni, MSi.Med, PA.
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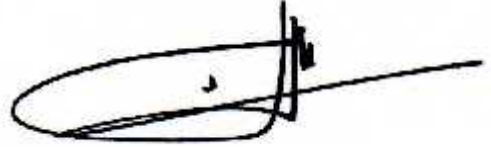
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d	Kelengkapan unsur dan kualitas jurnal (30%)	12	11.9
	Nilai Total	40	39
	Nilai yang didapat pengusul: 39 X 0.4 = 15.6		

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a	Kelengkapan unsur isi artikel	Unsur artikel telah memenuhi kaidah penulisan artikel dalam jurnal ilmiah yang dituju yaitu abstact, introduction, material and methods, results, discussion, acknowledgments, references.
b	Ruang lingkup & kedalaman pembahasan	Pembahasan artikel sudah cukup baik dan mendalam, dengan menggunakan cukup referensi sebagai acuan yaitu 41 referensi. Referensi yang digunakan untuk pembahasan cukup banyak yaitu sebanyak 20 Artikel. Dari seluruh artikel yang digunakan terdapat 14 artikel yang kurang update (terbit melebihi 10 tahun terakhir). Diskusi tentang pengaruh pestisida pada ibu hamil terhadap IGF-1 sebaiknya juga didukung hasil penelitian lain untuk melihat adanya konsistensi.
c	Kecukupan dan kemutahiran data/informasi dan metodologi	Metode penelitian yang digunakan sudah sesuai dan pemaparan data penelitian jelas, informatif sehingga mudah dipahami pembaca. Pengukuran variabel paparan pestisida menggunakan instrument kuesioner mengandung keterbatasan terkait bias informasi.
d	Kelengkapan unsur dan kualitas jurnal	Artikel diterbitkan oleh jurnal bereputasi dengan Q3 memiliki SJR 0,41 dan terindex scopus coverage 2010 – 2019.

Semarang, 15-4- 2020
Reviewer 2

A handwritten signature in black ink, consisting of a large, stylized loop followed by a vertical line and a horizontal stroke extending to the right.

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International Journal of Occupational and Environmental Medicine [Open Access](#)
Volume 11, Issue 1, January 2020, Pages 15-23

The relationship between pesticide exposure and umbilical serum igf-1 levels and low-birth weight : A case-control study in brebes , indonesia

(Article) ([Open Access](#))

Widyawati, S.A.^a, [Suhartono, S.^b](#) ✉️, Mexitalia, M.^c, Soejoenoes, A.^d 👤

^aFaculty of Health Science, Ngudi Waluyo University, Semarang, Indonesia

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Abstract

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Background: Birth weight is very important for long-term physical, mental, health, and brain development.

Pesticide exposure is thought to interfere with fetal growth, among others, through disruption of the function of the insulin-like growth hormone-1 (IGF-1) hormone. Objective: To analyze the relationship between exposure to pesticides during pregnancy and low-birth weight (LBW) through the disruption of the IGF-1 hormone. Methods: In a case-control study, babies born with LBW (birth weight <2500 g) and those born later with normal birth weight (≥2500 g) at 2 hospitals in Brebes were chosen as cases and controls, respectively. Maternal pesticide exposure was measured by interview using a questionnaire. Umbilical serum IGF-I level was tested using the ELISA method. Results: There was a significant relationship between pesticide exposure during pregnancy and LBW (OR 6.8; 95% CI 2.0 to 22.9) and low umbilical serum IGF-1 levels (OR 3.6; 95% CI 1.2 to 11.1). There was a significant relationship between low umbilical serum IGF-1 levels and LBW (OR 8.9; 95% CI 2.4 to 32.1). Conclusion: There was a significant relationship between pesticide exposure during pregnancy and LBW through the umbilical serum IGF-1 reduction pathway. © 2020, NIOC Health Organization. All rights reserved.

SciVal Topic Prominence ⓘ

Topic: Zinc | Pre-Eclampsia | Maternal serum

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Fetal blood Infant Insulin-like growth factor I Low birth weight Organophosphates Pesticides

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Zareaan, E. , Heidarpour, M. , Kargarzadeh, E.
(2017) *International Journal of Reproductive BioMedicine*

Maternal serum insulin-like growth factor (IGF-I) and binding proteins IGFBP-1 and IGFBP-3 at 11-13 weeks' gestation in pregnancies delivering small for gestational age neonates

Sifakis, S. , Akolekar, R. , Kappou, D.
(2012) *European Journal of Obstetrics and Gynecology and*

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Vol 11, No 4 October (2020)

- For an updated review along with a podcast on COVID-19 see the [Review Article](#).



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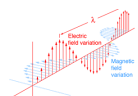
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The Relationship between Pesticide Exposure and Umbilical Serum IGF-1 Levels and Low-birth Weight: A Case-control Study in Brebes, Indonesia

Sigit Ambar Widyawati¹, **Suhartono Suhartono**²,
Maria Mexitalia³, Ariawan Soejoenoes⁴

Abstract

Background: Birth weight is very important for long-term physical, mental, health, and brain development. Pesticide exposure is thought to interfere with fetal growth, among others, through disruption of the function of the insulin-like growth hormone-1 (IGF-1) hormone.

Objective: To analyze the relationship between exposure to pesticides during pregnancy and low-birth weight (LBW) through the disruption of the IGF-1 hormone.

Methods: In a case-control study, babies born with LBW (birth weight <2500 g) and those born later with normal birth weight (≥2500 g) at 2 hospitals in Brebes were chosen as cases and controls, respectively. Maternal pesticide exposure was measured by interview using a questionnaire. Umbilical serum IGF-I level was tested using the ELISA method.

Results: There was a significant relationship between pesticide exposure during pregnancy and LBW (OR 6.8; 95% CI 2.0 to 22.9) and low umbilical serum IGF-1 levels (OR 3.6; 95% CI 1.2 to 11.1). There was a significant relationship between low umbilical serum IGF-1 levels and LBW (OR 8.9; 95% CI 2.4 to 32.1).

Conclusion: There was a significant relationship between pesticide exposure during pregnancy and LBW through the umbilical serum IGF-1 reduction pathway.

Keywords: Pesticides; Fetal blood; Infant, low birth weight; Organophosphates; Insulin-like growth factor I

Introduction

Birth weight is one of the determinants of a baby's survival; it determines the quality of physical and mental growth in the future. Birth weight is even known to have a close relation-

ship with long-term brain development.¹ Low-birth weight (LBW), ie, birth weight <2500 g,² is an important health concern, particularly in developing countries.³ LBW is a major predictor of prenatal mortality and morbidity. Recent studies have found that LBW also increases the risk for non-

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Effects of Various Densities of 50 Hz Electromagnetic Field on Serum IL-9, IL-10, and TNF- α Levels

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Abstract

Background: Extremely low-frequency electromagnetic fields (ELF-EMFs) are abundantly produced in modern societies. In recent years, interest in the possible effects of ELF-EMFs on the immune system has progressively increased.

Objective: To examine the effects of ELF-EMFs with magnetic flux densities of 1, 100, 500, and 2000 μ T on the serum levels of interleukin (IL)-9, IL-10, and tumor necrosis factor-alpha (TNF- α).

Methods: 80 adult male rats were exposed to ELF-EMFs at a frequency of 50 Hz for 2 h/day for 60 days. The serum cytokines were measured at two phases of pre- and post-stimulation of the immune system by human serum albumin (HSA).

Results: Serum levels of IL-9 and TNF- α , as pro-inflammatory cytokines, were decreased due to 50 Hz EMFs exposure compared with the controls in the pre- and post-stimulation phases. On the contrary, exposures to 1 and 100 μ T 50 Hz EMFs increased the levels of anti-inflammatory cytokine, and IL-10 only in the pre-stimulation phase. In the post-stimulation phase, the mean level of serum IL-10 was not changed in the experimental groups.

Conclusion: The magnetic flux densities of 1 and 100 μ T 50 Hz EMFs had more immunological effects than EMFs with higher densities. Exposure to 50 Hz EMFs may activate anti-inflammatory effects in rats, by down-modulation of pro-inflammatory cytokines (IL-9 and TNF- α) and induction of the anti-inflammatory cytokine (IL-10).

Keywords: Interleukin-9; Interleukin-10; Tumor necrosis factor-alpha; Immunization; Electromagnetic fields

Introduction

In the past decades, researchers started to pay more attention to the effects of non-ionizing extremely low-frequency electromagnetic fields (ELF-EMFs) on biological system.¹ Some studies have indicated that exposure to ELF-EMFs has possible health hazards such as cancer,

leukemia, neurodegenerative diseases, and infertility.²⁻⁵ Despite potential negative impacts of ELF-EMFs, nowadays, they can effectively be used to diagnose and treat various diseases such as cancer, muscle regeneration, diabetes, arthritis, and neurological disorders.^{1,6} These disorders can be caused by abnormal immune response to harmful invaders. During an immune

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Genomic Instability in Exfoliated Buccal Cells among Cement Warehouse Workers

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Abstract

Background: Workers in cement warehouses of Kerala are enduring long-standing exposure to cement dust, which is considered genotoxic.

Objective: To evaluate the extent of genotoxicity and cytotoxicity caused due to exposure of cement dust among those working in cement warehouses.

Methods: The study included 82 cement warehouse workers and 82 age-matched individuals with no exposure to cement dust. Exfoliated buccal micronucleus cytome assay (BMCyt) was performed to analyze the genotoxic and cytotoxic effects caused by inhalation of cement dust.

Results: The frequency of various genotoxic and cytotoxic end markers (micronucleated cells [2-fold increase, $p < 0.001$], nuclear buds [4-fold increase, $p < 0.001$], binucleated cells [4-fold increase, $p < 0.001$], karyorrhectic cells [2-fold increase, $p < 0.001$], pyknotic cells [3-fold increase, $p < 0.001$], and karyolytic cells [2-fold increase, $p < 0.001$]) were higher in the exposed workers compared with unexposed group. Increase of these parameters represented an increased level of chromosomal damage, nuclear disintegration and increased cell death among exposed group compared with unexposed group.

Conclusion: Continuous exposure to cement dust results in increased frequency of nuclear aberrations and cellular apoptosis. This may lead to defects in genome maintenance, accelerated ageing, increased chance of oral cancer and neurodegenerative disorders in those occupationally exposed to cement dust.

Keywords: Occupational exposure; Mutagenicity tests; Chromosome aberrations; Apoptosis; Oral mucosal absorption; Micronuclei, chromosome-defective; Micronucleus tests; Biomarkers; DNA damage

Introduction

Portland cement is one of the most commonly used building materials across the world. The essential compounds of cement include calcium oxide, silicon dioxide, aluminium oxide,

manganese, iron oxide, lead, chromium, cadmium, arsenic, and zinc.¹ Supplementary raw materials such as silica sand, iron oxide, and bauxite containing hydrated aluminium, may be used in lesser amounts to get the required composition.² Employees in cement factories, construction sites,

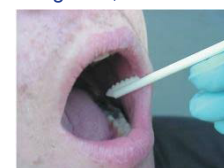
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Polymorphism of Glutathione S-transferase Genes and the Risk of Toxic Liver Damage in Petrochemical Workers

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Abstract

Background: Exposure to numerous chemicals, including industrial ones, may result in liver damage. The body susceptibility to the environmental hazards largely depends on the activity of the enzymes in the xenobiotic detoxification system. Function abnormalities of such enzymes due to genetic variations would increase the risk of developing various diseases.

Objective: To elucidate the relationship between polymorphism in *glutathione S-transferase* genes (*GSTM1*, *GSTT1* and *GSTP1*) and the risk of toxic liver damage in a group of petrochemical workers.

Methods: This study was conducted on 72 workers with toxic liver injury, 156 healthy workers, and 322 healthy individuals without history of occupational exposure to chemicals. Genotyping of the *GSTP1* rs1695 gene polymorphism was performed using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Polymerase chain reaction (PCR) was used to perform genotyping of the *GSTM1* and *GSTT1* genes polymorphism.

Results: There was a significant difference in genotype frequencies of the *GSTP1* rs1695 gene polymorphism among the groups studied. The distribution of Val/Val genotype of the *GSTP1* rs1695 gene polymorphism had a higher incidence in healthy workers compared with patients with toxic liver damage ($p=0.036$). No significant association was found between the *GSTM1* and *GSTT1* polymorphisms and toxic liver damage.

Conclusion: The *GSTP1* rs1695 gene polymorphism can play a protective role in the development of toxic liver damage in petrochemical workers.

Keywords: Glutathione S-transferase; Liver diseases; Polymorphism, genetic

Introduction

Toxic liver damage comprises a broad range of diseases caused by hepatotoxic effects of diverse chemicals, mainly after occupational exposure. In petrochemical industries, numerous hazardous substances with hepatotropic prop-

erties that cause both acute and chronic hepatic diseases (eg, toxic hepatitis) are used. The impact of chemicals and their metabolites brings about pronounced functional and structural changes in hepatocytes and activation of cytotoxic immune T cells. The toxic effect of xenobiotics depends on a variety of factors—the compound chemical

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