

INTISARI

Latar belakang: Indonesia merupakan negara agraris yang memiliki lahan pertanian yang luas dan dikelola oleh petani. Petani berperan besar dalam penyediaan pangan nasional. Namun, petani seringkali diabaikan kesehatannya, terutama yang berkaitan dengan penggunaan pestisida. Paparan kronis pestisida terbukti berhubungan dengan berbagai jenis kanker. Terjadinya kanker salah satunya ditandai dengan metilasi promotor gen p16.

Tujuan penelitian: Penelitian ini bertujuan untuk mengetahui frekuensi metilasi promotor gen p16 dan hubungannya dengan paparan pestisida pada petani di Kecamatan Ngablak, Kabupaten Magelang

Metode: Desain penelitian ini adalah *cross sectional*. Variabel independen adalah paparan pestisida dan variabel dependen adalah metilasi promotor gen p16. Subjek penelitian adalah 88 petani. Pengambilan sampel darah dilakukan bersamaan dengan wawancara mengenai paparan pestisida. Darah diekstraksi dan DNA digunakan untuk pemeriksaan metilasi promotor gen p16 menggunakan teknik *methylation specific PCR*.

Hasil penelitian: Frekuensi metilasi promotor gen p16 ditemukan sebesar 26,2%. Korelasi antara paparan pestisida (lamanya, frekuensi, durasi, penyemprotan terakhir, dosis, arah penyemprotan, pemakaian alat pelindung diri, mencuci tangan dan mandi setelah penyemprotan, serta skor intensitas paparan) dianalisis dan nilai p yang didapatkan $>0,05$. Nilai p untuk karakteristik subjek, seperti umur, jenis kelamin, dan merokok juga tidak signifikan, sedangkan indeks massa tubuh memiliki nilai $p = 0,030$ terhadap terjadinya metilasi promotor gen p16.

Kesimpulan: Paparan pestisida tidak berkorelasi dengan metilasi promotor gen p16, hanya indeks massa tubuh yang berkorelasi negatif dengan metilasi promotor gen p16 pada petani di Kecamatan Ngablak, Kabupaten Magelang.

Kata kunci: hipermetilasi, kanker, pestisida, promotor gen p16

ABSTRACT

Background: Agriculture is one of the key sectors within the Indonesian economy. Nearly half of Indonesian people are employed in agricultural sector as farmers. However, their health, wellbeing, and safety are frequently neglected, especially when using pesticide. Cancer is one of negative long term effects of pesticide exposure. It could be marked by methylation of cancer related genes, for example p16.

Objective: The aim of this research is to explore the frequency of methylation status of p16 gene promoter and its association with pesticide exposure in farmers at Ngablak Subdistrict, Magelang Regency.

Methods: A cross sectional study using survey was used to collect the data. Eighty-eight famers used pesticides for more than 3 months were personally interviewed using designed questionnaire. Blood sampling was taken then extracted. Result of DNA extraction was used for the examination of methylation status of p16 gene promoter, which was detected by using methylation specific PCR.

Results: As many as 26.2% methylation of p16 was found among farmers. Associations between pesticide exposures (time/period, frequency, duration, last spraying, dosage, spraying direction, personal protective equipment use, hand washing, taking bath after spraying, and exposure intensity score) and p16 methylation were observed, and p values were >0.05 . The p values for subjects' characteristics such as age, sex, and smoking were not significant too. But it was opposite in body mass index which had p value 0.030.

Conclusion: Pesticide exposure does not relate to p16 gene promoter methylation. Otherwise, body mass index has negative correlation to p16 gene promoter methylation in farmers at Ngablak Subdistrict, Magelang Regency.

Keywords: cancer, hypermethylation, p16 gene promoter, pesticide