Studi toksisitas akut fenol dan derivatnya terhadap daphnia magna = Acute toxicity study of phenol and its derivatives to daphnia magna

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Abstrak

Fenol dan derivatnya merupakan bahan kimia yang memiliki efek toksik. Oleh sebab itu pada penelitian ini dilakukan uji toksisitas akut dari fenol dan ke-empat derivatnya terhadap Daphnia magna. Parameter yang digunakan dalam uji toksisitas ini adalah nilai EC50-24h. Derivat fenol yang digunakan adalah 1-naftol, 2-naftol, asam salisilat dan metil salisilat. Data immobilisasi yang diperoleh kemudian diolah menggunakan data probit.

Dari hasil pengujian diperkirakan nilai EC50-24h fenol, 1-naftol, 2-naftol, asam salisilat dan metil salisilat terhadap Daphnia magna adalah 39,651 ppm; 6,682 ppm; 6,520 ppm; 109,184 ppm; 33,562 ppm. Terdapat hubungan antara struktur kimia dari fenol dan derivatnya terhadap nilai EC50-24h. Selain itu, dilakukan pula uji toksisitas akut terhadap campuran fenol dan derivatnya.

Pengujian toksisitas akut terhadap campuran dilakukan untuk campuran fenol dengan 1-naftol; fenol dengan 2-naftol; fenol dengan asam salisilat; fenol dengan metil salisilat; dan 2-naftol dengan asam salisilat. Hasil pengujian toksisitas akut campuran memperlihatkan adanya efek interaksi antara senyawa tunggal yang diujikan.

.....Phenol and its derivatives are chemical compounds which possess some toxic effects. In this research, the acute toxicity of phenol and its derivatives to Daphnia magna was investigated. The main parameter which is studied in this research was the value of EC50-24h. Derivatives of phenol used in this study are 1-naphthol, 2-naphthol, salicylic acid, and methyl salicylic. Immobilization data gained from the experiment was then analyzed using probability unit (probit).

From the experiment, it was concluded that the EC50-24h value of phenol, 1-naphthol, 2-naphthol, salicylic acid, and methyl salicylic to Daphnia magna were 39,651 ppm; 6,682 ppm; 6,520 ppm; 109,184 ppm; and 33,562 ppm, respectively. There is a relationship between the molecular structures of phenol and its derivatives with the value of EC50-24h. Furthermore, the acute toxicity from the mixture of phenol and its derivatives was also investigated.

The acute toxicity from the mixture of phenol and its derivatives was carried out to the mixtures of phenol with 1-naphthol; phenol with 2-naphthol; phenol with salicylic acid; phenol with methyl salicylic; and 2-naphthol with salicylic acid. The result of acute toxicity study of these mixtures concluded that there was an effect caused by the interaction between the every investigated compounds in each mixture.