SINTESIS N-ASETIL PIRAZOLINA BERBAHAN DASAR 2,4-DIHIDROKSIASETOFENON DAN *p*-ANISALDEHIDA SERTA SITOTOKSISITASNYA TERHADAP BEBERAPA SEL KANKER

Kiki Rizki Pinasti
12/334617/PA/14850

INTISARI

Sintesis turunan N-asetil pirazolina dan uji sitotoksisitasnya terhadap beberapa sel kanker telah dilakukan. Tujuan pertama dari penelitian ini adalah mempelajari pengaruh penggunaan katalis ganda KOH-montmorillonit pada sintesis kalkon dari 2,4-dihidroksiasetofenon dan *p*-anisaldehida secara konvensional (pengadukan) dan sonokimia. Tujuan berikutnya dari penelitian ini adalah mempelajari reaksi siklokondensasi pada sintesis N-asetil pirazolina secara konvensional (refluks) dan sonokimia. Struktur senyawa kalkon dan N-asetil pirazolina dielusidasi dengan spektrometer FT-IR, GC-MS, ^{1}H- dan ^{13}C-NMR. Selanjutnya, produk N-asetil pirazolina diuji sitotoksisitasnya secara *in vitro* untuk menentukan nilai IC_{50} terhadap sel HeLa, MCF-7, T47D dan Vero.

Metode sintesis kalkon secara sonokimia tanpa montmorilonit memberikan hasil optimum pada waktu reaksi 7 jam dengan rendemen 48,12%. Reaksi siklokondensasi kalkon, hidrazin monohidrat dan asam asetat glasial dalam pelarut metanol juga memberikan hasil terbaiknya melalui metode sonokimia. Produk N-asetil pirazolina yang dihasilkan berupa padatan berwarna putih tulang dengan titik lebur 243-245 °C dan rendemen sebesar 82,84%. Nilai IC_{50} N-asetil pirazolina terhadap sel Hela, MCF-7, T47D, dan Vero berturut-turut 346, 288, 630, dan 191 µg/mL. Berdasarkan hasil tersebut, senyawa N-asetil pirazolina tidak memberikan toksisitas yang signifikan terhadap sel kanker dan sel normal.

Kata kunci : kalkon, N-asetil pirazolina, metode sonokimia, sitotoksisitas, sel kanker

SYNTHESIS OF N-ACETYL PYRAZOLINE FROM 2,4-DIHYDROXYACETOPHENONE AND *p*-ANISALDEHYDE AND ITS CITOTOXICITY TOWARD CANCER CELLS

Kiki Rizki Pinasti
12/334617/PA/14850

ABSTRACT

Synthesis of N-acetyl pyrazoline derivative and it's citotoxicity toward cancer cells have been carried out. The first aim of this research was to study the effect of double catalyst KOH-montmorillonite in the synthesis of chalcone from 2,4-dihidroxyacetophenone and p-anisaldehyde by conventional (stirring) and sonochemistry methods. The second was to study the cyclocondensation reaction to yield N-acetyl pyrazoline by conventional (reflux) and sonochemistry methods. The structure of chalcone and N-acetyl pyrazoline were elucidated by FT-IR, GC-MS, ^{1}H- dan ^{13}C-NMR spectrometers. In addition, the toxicity of N-acetyl pyrazoline againts HeLa, MCF-7, T47D, and Vero cells were tested via *in vitro* by determination of their IC_{50} values.

Synthesis of chalcone by sonochemistry method without montmorillonit gave the optimum product in 7 hours with 48.12% yield. Cyclocondensation reaction of chalcone with hydrazine monohydrate and glacial acetic acid in methanol also produced in high yield by sonochemistry method. The product of N-acetyl pirazoline was yielded in 82.84% as pale white solid with m.p 243-245 °C. The IC_{50} value againts Hela, MCF-7, T47D, and Vero cells were 346, 288, 630, and 191 µg/mL, respectively. It was concluded that the N-acetyl pyrazoline showed no-significant anticancer activity.

Key words : chalcone, N-acetyl pyrazoline, sonochemistry method, citotoxicity, cancer cell