Sintesis 3,3-(Dipirolidinometil) Kurkumin Pirazol = Synthesis of 3,3-(Dipyrrolidinylmethyl) Curcumin Pyrazole

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Abstrak

ABSTRAK
Kurkumin merupakan konstituen utama dari tanaman kunyit (Curcuma longa) yang dikenal memiliki aktivitas antiinflamasi yang poten. Kurkumin juga dikenal karena profil keamanannya yang baik. Namun, potensi kurkumin sebagai agen terapeutik terbatas karena stabilitas, kelarutan, dan bioavailabilitasnya yang buruk. Penelitian ini bertujuan untuk memperoleh senyawa baru turunan kurkumin yang diharapkan mempunyai stabilitas dan kelarutan lebih baik. Sintesis turunan kurkumin baru dilakukan melalui siklisasi gugus diketon pada kurkumin menjadi cincin pirazol dan penambahan dipirolidinometil pada senyawa tersebut melalui reaksi Mannich. Sintesis turunan kurkumin ini dilakukan melalui 2 tahap pereaksian. Tahap pertama adalah sintesis kurkumin pirazol (KP). KP diperoleh dengan mereaksikan kurkumin dengan hidrazin hidrat dalam asam asetat glasial. Pada tahap ini, diperoleh nilai rendemen sebesar 85,56%. Tahap kedua dilakukan dengan mereaksikan hasil sintesis kurkumin pirazol dengan formaldehid dan basa pirolidin dalam etanol. Hasil akhir sintesis dimurnikan dengan kromatografi lapis tipis (KLT) preparatif menggunakan fase gerak kloroform,etanol,ammonia (11:0,5:0,5). Nilai rendemen senyawa murni diperoleh sebesar 15,66%. Elusidasi struktur senyawa menggunakan Spektrofotometer FT IR menunjukkan bahwa senyawa 3,(dipirolidinometil) kurkumin pirazol telah berhasil disintesis.
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<i>ABSTRACT
Curcumin is the main constituent of turmeric (Curcuma longa) which is known to have potent anti inflammatory activity. Curcumin is also known for its safety profile. However, the potential of curcumin as a therapeutic agent is limited due to its poor stability, solubility, and bioavailability. This research aims to obtain new compound derived from curcumin which is expected to have better stability and solubility. The synthesis of new curcumin derivative was carried out through cyclization of -diketone groups in curcumin into a pyrazole ring and the addition of dipyrrolidinylmethyl to the compound through Mannich reaction. The synthesis was carried out through two stages of reaction. The first step was the synthesis of curcumin pyrazole. This was obtained by reacting curcumin with hydrazine hydrate in glacial acetic acid. At this stage, yield value of 85.56% was obtained. The second step was carried out by reacting the results of the synthesis of curcumin pyrazole with formaldehyde and pyrolidine base in ethanol. The final synthesis result then purified by preparative thin layer chromatography (TLC) using the mobile phase of chloroform,ethanol,ammonia (11: 0.5: 0.5). The yield value of pure compound was 15.66%. Structure elucidation of the compound using FT IR spectrophotometer showed that the compound of 3,3(dipyrrolidinylmethyl) curcumin pyrazole was successfully synthesized.<i/>