

Percobaan sintesis analog kurkumin baru melalui reaksi dihidropirimidin-2-on kurkumin dan basa mannich dari morfolin = Experiments of curcumin analogue synthesis via reaction of dihydropyrimidine-2-one curcumin and mannich base from morpholine / Agnes Yuliana

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Abstrak

[Kurkumin merupakan senyawa multipoten yang terdapat dalam tanaman kunyit. Tanaman kunyit banyak terdapat di Indonesia dan negara Asia lainnya. Kunyit sering digunakan sebagai bahan jamu, bumbu masakan, dan perwarna makanan. Meskipun kurkumin telah menunjukkan banyak manfaat, kurkumin masih belum diakui sebagai senyawa obat. Hal ini disebabkan bioavailabilitas kurkumin buruk. Salah satu alasan buruknya bioavailabilitas kurkumin adalah kelarutan kurkumin pada cairan biologis rendah dan stabilitasnya kurang baik. Usaha untuk meningkatkan bioavailabilitas kurkumin telah dilakukan, salah satunya adalah dengan melakukan sintesis analog kurkumin. Substitusi basa Mannich pada senyawa organik dapat meningkatkan kelarutan senyawa tersebut. Berdasarkan pemikiran tersebut, senyawa derivat Mannich dihidropirimidin-2-on kurkumin dicoba untuk disintesis. Percobaan sintesis ini dilakukan melalui tiga tahap reaksi, yaitu (1) sintesis 4,6-dimetil-2-hidroksipirimidin HCl, (2) sintesis dihidropirimidin-2-on kurkumin, dan (3) Substitusi basa Mannich pada dihidropirimidin-2-on kurkumin. Sintesis tahap (1) dilakukan dengan merefluks urea dan asetil aseton dalam pelarut etanol pada suhu 70oC memperoleh rendemen 77,59%; tahap (2) dilakukan dengan merefluks senyawa 4,6-dimetil-2-hidroksipirimidin HCl dengan vanilin dalam campuran pelarut etanol dan toluena pada suhu 100oC memperoleh rendemen 94,81%; tahap (3) dilakukan dengan mengaduk senyawa dihidropirimidin-2-on kurkumin dalam pelarut asam asetat glasial pada suhu 70oC. Dari hasil elusidasi struktur diketahui bahwa produk senyawa sintesis tahap (3) belum diperoleh., Curcumin is a multipotent compound contained in turmeric.

Turmeric is widely

available in Indonesia and other Asian countries. Turmeric is often used as a medicinal, seasoning, and food coloring. Although curcumin has shown many benefits, curcumin is still not recognized as medicinal compounds. This is due to poor bioavailability of curcumin. The reasons for poor bioavailability of curcumin are the low solubility of curcumin in biological fluids and poor stability. Attempts have been done to improve the bioavailability of curcumin, one of which is to perform synthesis of curcumin analogues. Mannich base substitution in organic compounds can increase the solubility. Based on that idea, Mannich derivatives of compounds dihydropyrimidine-2-one tried to be synthesized. This synthesis

experiments conducted through three reaction steps, namely (1) the synthesis of 4,6-dimethyl-2-hydroxypyrimidine HCl, (2) synthesis of dihydropyrimidine-2-one curcumin, and (3) substitution Mannich bases on dihydropyrimidine-2-one curcumin, Synthesis stage (1) conducted by refluxing urea and acetyl acetone in ethanol at 70°C obtained 77.59% yield; Step (2) is carried out by refluxing the compound 4,6-dimethyl-2-hydroxypyrimidine HCl with vanilin in a solvent mixture of ethanol and toluene at 100oC obtained 94.81% yield; Step (3) carried out by stirring dihydropyrimidine-2-one curcumin compound in glacial acetic acid solvent at 70°C. From the elucidation results, it is known that the product of synthesis stage (3) has not been obtained.]