Sintesis dan uji aktivitas antibakteri senyawa 6-amino-2-[(E) - (4-hidroksi-3- metoksifenil) etenil] 3,4 dihidrokuinazolin-4-on dan senyawa antaranya = Synthesis and antibacterial activity of compound 2-[(E)-(-4-hydroxy-3- methoxyphenyl) ethenyl]-6- nitro 3,4-dihydroquinazolin-4-one and its intermediate / Arif Arrahman

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Abstrak

ABSTRAK
Resistensi yang terjadi pada trimetoprim dan beberapa antibiotika konvensional lainnya menyebabkan pencarian akan molekul antibakteri baru dari golongan senyawa yang berbeda sangat dibutuhkan. Senyawa turunan kuinazolinon diketahui memiliki aktivitas antibakteri, oleh karena itu sintesis senyawa 6-amino-2-[(E)-(4-hidroksi-3-metoksifenil)etenil]-3,4-dihidrokuinazolin-4-on dan senyawa antaranya yang diujikan sebagai antibakteri perlu dilakukan. Senyawa 6-amino-2-[(E)-(4-hidroksi-3-metoksifenil)etenil]-3,4-dihidrokuinazolin-4-on disintesis dengan empat tahap reaksi. Tahap pertama adalah sintesis 2-metil-3,4-dihidrokuinazolin-4-on, tahap kedua adalah sintesis 2-metil-6-nitro-3,4-dihidrokuinazolin-4-on, tahap ketiga adalah sintesis 2-[(E)-(4-hidroksi-3-metoksifenil)etenil]-6-nitro-3,4-dihidrokuinazolin-4-on dan tahap keempat adalah sintesis 6-amino-2-[(E)-(4-hidroksi-3-metoksifenil)etenil]-3,4-dihidrokuinazolin-4-on. produk yang dihasilkan dari setiap tahapan dimurnikan dengan cara pencucian dan rekristalisasi, kemudian diuji kemurniannya dengan jarak lebur dan kromatografi lapis tipis. Bobot molekul senyawa dianalsis dengan LC-MS, Struktur senyawa dielusidasi menggunakan spektrofotometri UV-Vis, FT-IR, 1H-NMR dan 13C-NMR, COSY, HMQC dan HMBC. Uji aktivitas antibakteri dilakukan pada bakteri Staphylococcus aureus ATCC 25923, Salmonella typhimurium ATCC 14028 dan Escherichia coli ATCC 25922. Hasil penelitian menunjukkan bahwa senyawa target telah berhasil disintesis dan dimurnikan berdasarkan metode kimia organik. Struktur senyawa telah dibuktikan kebenarannya melalui elusidasi struktur. Hasil uji aktivitas antibakteri senyawa 6-amino-2-[(E)-(4-hidroksi-3-metoksifenil)etenil]-3,4-dihidrokuinazolin-4-on tidak menunjukkan aktivitas antibakteri.
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ABSTRACT
Resistance in trimethoprim and several conventional antibacetria, made the searching for new antibacterial agent from different groups of compound became nescessary. Quinazolinone derivate was known having antibacterial activity, for those reasons, synthesis of compound 6-Amino-2-[(E)-(4-hydroxy-3-methoxyphenyl)ethenyl)-6-nitro-3,4-dihydroquinazolin-4-one and its intermediate as antibacteria was necessary to be conducted. The titled compound was synthesized via four steps. First step was synthesis of 2-methyl-3,4-

dihydroquinazolin-4-one. Second step was syhtesis of 2-methyl-6-nitro-3,4-dihydroquinazolin-4-one. Third step was synthesis of 2-[(E)-(4-hydroxy-3-methoxyphenyl)ethenyl]-6-nitro-3,4-dihydroquinazolin-4-one. Forth step was synthesis of 6-Amino-2-[(E)-(4-hydroxy-3-methoxy phenyl)ethenyl)-6-nitro-3,4-dihydroquinazolin-4-one. The synthesized product from each step was purified by washing and recrystalization. The purity testing was performed by examining melting range and thin layer chromatography. Mollecuar mass of synthezised compound was determined using LC-MS. Structure of synthesized compound was elucidated using UV-Vis, FT-IR, 1H-NMR dan 13C-NMR, COSY, HMQC and HMBC. Screening for antibacterial activity was performed against Staphylococcus aureus ATCC 25923, Salmonella typhimurium ATCC 14028 and Escherichia coli ATCC 25922. The result indicated that titled compound has sucsessfully been synthesized and purified using organic chemistry method. Structure of desired compound was confirmed based on structural elucidation analysis. The result of antibacterial activity of compound 6-Amino-2-[(E)-(4-hydroxy-3-methoxyphenyl) ethenyl)-6-nitro-3,4-dihydroquina-zolin-4-one did not perform antibacterial acitivity.