

## Sintesis senyawa 6-amino-2-(E)-2- feniletetil-3,4-dihidrokuinazolin-4-on = Synthesis of 6-amine-2-(E)-2 phenylethenyl-3,4-dihydroquinazolin-4- one

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### Abstrak

#### <b>ABSTRACT</b><br>

Senyawa golongan kuinazolinon memiliki aktivitas biologis yang luas. Salah satunya adalah senyawa 2-[(E)-2-feniletetil]-3,4-dihidrokuinazolin-4-on yang memiliki aktifitas antibakteri. Aktivitas antibakteri paling efektif ditunjukkan oleh turunan senyawa kuinazolinon dengan cincin benzena yang tidak tersubstitusi atau tersubstitusi oleh substituen kecil dan cincin pirimidin yang tersubstitusi oleh substituen besar. Dalam rangka memperoleh senyawa turunan kuinazolinon baru yang diperkirakan memiliki aktivitas antibakteri, telah dilakukan sintesis senyawa 6-amino-2-[(E)-2-feniletetil]-3,4-dihidrokuinazolin-4-on. Sintesis dilakukan melalui empat tahap. Tahap 1, sintesis 2-metil-3,4-dihidrokuinazolin-4-on (1) dari antranilamida dan asetamida dengan iradiasi microwave. Tahap 2, sintesis 2-metil-6-nitro-3,4-dihidrokuinazolin-4-on (2) dari nitrasi 2-metil-3,4-dihidrokuinazolin-4-on dengan asam nitrat pekat berasap dan asam sulfat pekat. Struktur molekul produk 1 dan 2 telah dikonfirmasi dengan FT-IR. Tahap 3, sintesis 6-nitro-2-[(E)-2-feniletetil]-3,4-dihidrokuinazolin-4-on (3) dari kondensasi Knoevenagel 2-metil-6-nitro-3,4-dihidrokuinazolin-4-on dan benzaldehida. Tahap 4, sintesis 6-amino-2-[(E)-2-feniletetil]-3,4-dihidrokuinazolin-4-on (4) dari reduksi 6-nitro-2-[(E)-2-feniletetil]-3,4-dihidrokuinazolin-4-on dengan serbuk besi, dan asam klorida pekat menggunakan ultrasonik. Struktur molekul produk 3 dan 4 telah dikonfirmasi dengan FT-IR dan <sup>1</sup>H-NMR. Hasil penelitian menunjukkan bahwa produk hasil sintesis sudah sesuai dengan senyawa yang diharapkan dengan nilai rendemen tahap 1 sebesar 90,19%; tahap 2 sebesar 79,61%; tahap 3 sebesar 42,04% dan tahap 4 sebesar 72,24%.

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#### <b>ABSTRACT</b><br>

Quinazolinone derivatives have wide spectrum of biological activity. One of them is 2-[(E)-2-phenylethenyl]-3,4-dihydroquinazolin-4-one which have antibacterial activity. The most effective antibacterial activity were showed by quinazolinone derivative with an unsubstituted benzene ring or substituted with one small substituents and a pyrimidine ring substituted with large substituents. To get a novel quinazolinone derivative which predicted to have antibacterial activity, 6-amine-2-[(E)-2-phenylethenyl]-3,4-dihydroquinazolin-4-one has been synthesized. There were four stages of synthesis. First, synthesis of 2-methyl-3,4-dihydroquinazolin-4-one (1) from antranilamide and acetamide by microwave irradiation. Second, synthesis of 2-methyl-6-nitro-3,4-dihydroquinazolin-4-one (2) by nitration of 2-methyl-3,4-dihydroquinazolin-4-one with nitric acid fuming and concentrated sulfuric acid. The structure of first and second products was confirmed using FT-IR. Third, synthesis of 6-nitro-2-[(E)-2-phenylethenyl]-3,4-dihydroquinazolin-4-one (3) by Knoevenagel condensation of 2-methyl-6-nitro-3,4-dihydroquinazolin-4-one and benzaldehyde. Fourth, synthesis of 6-amine-2-[(E)-2-phenylethenyl]-3,4-dihydroquinazolin-4-one (4) by reduction of 6-nitro-2-[(E)-2-phenylethenyl]-3,4-dihydroquinazolin-4-one with iron powder and concentrate hydrochloric acid using ultrasonic. The structure of third and fourth

products was confirmed using FT-IR and <sup>1</sup>H-NMR. The results showed that the synthesized products are in conformity with the expected compound with 90,19% yield for first stage; 79,16% yield for seconde stage; 42,04% yield for third stage and 72,24% yield for fourth stage.