PRIMARY ANTIMICROBIAL SCREENING OF [1,2,4]TRIAZOLO[4,3-*a*]QUINAZOLIN-5(4*H*)-ONE DERIVATIVES

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Introduction. The search for new and effective antimicrobial agents is an important task of medical chemistry because of the growth of pathogens drug resistance. Hence it is necessary to check antimicrobial activity of new synthesized compounds.

Aim. The aim of present study is to conduct primary antimicrobial screening of new [1,2,4]triazolo[4,3-*a*]quinazolin-5(4*H*)-one derivatives containing amide group attached by carbon or sulfur – carbon chain.

Materials and methods. The set of 169 new [1,2,4]triazolo[4,3-*a*]quinazolin-5(4*H*)-one derivatives containing amide group attached by carbon or sulfur – carbon chain has been tested for activity against 5 bacteria: *Escherihia coli*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Staphylococcus aureus*, and 2 fungi: *Candida albicans and Cryptococcus neoformans*.

Samples were tested in water – 0.3% DMSO solutions with final sample concentrations 32 μg/ml (70 – 80 μMol). All bacteria were cultured in Cation-adjusted Mueller Hinton broth (CAMHB) at 37 °C overnight. The resultant mid-log phase cultures was added to each well of the compound containing plates, giving a cell density of $5 \cdot 10^5$ CFU/mL. All the plates were covered and incubated at 37 °C for 18 h without shaking. Inhibition of bacterial growth was determined by measuring absorbance at 600 nm using a Tecan M1000 Pro monochromator plate reader.

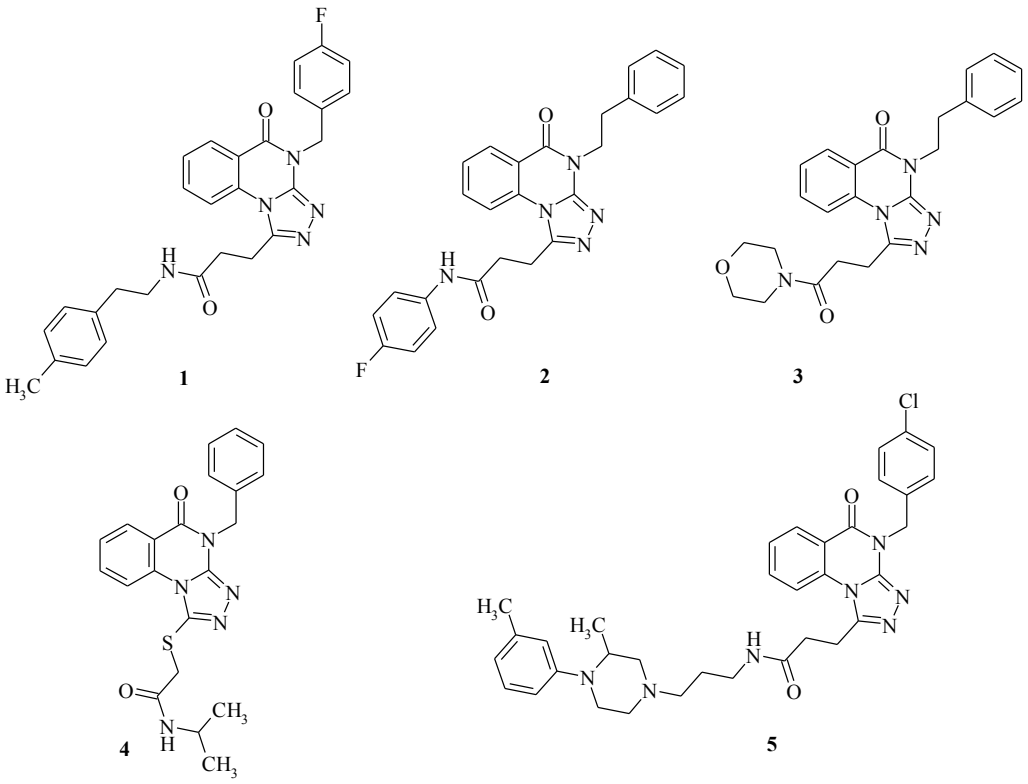
Fungi strains were cultured for 3 days on Yeast Extract-Peptone Dextrose (YPD) agar at 30 °C. A yeast suspension of $1 \cdot 10^6$ to $5 \cdot 10^6$ cells/mL (as determined by OD530) was prepared from five colonies. These stock suspensions were diluted with Yeast Nitrogen Base (YNB) broth to a final concentration of $2.5 \cdot 10^3$ CFU/mL. Then, 45 μL of the fungi suspension was added to each well of the compound-containing plates. Plates were covered and incubated at 35°C for 24 h without shaking. Growth inhibition of Candida albicans was determined measuring absorbance at 530 nm (OD530), while the growth inhibition of Cryptococcus neoformans was determined measuring the difference in absorbance between 600 and 570 nm (OD600-570), after

the addition of resazurin (0.001% final concentration) and incubation at 35 °C for additional 2 h. The absorbance was measured using a Biotek Synergy HTX plate reader.

Colistin and Vancomycin were used as positive bacterial inhibitor standards for Gramnegative and Grampositive bacteria, respectively. Fluconazole was used as a positive fungal inhibitor standard for *Candida albicans* and *Cryptococcus neoformans.*

The tests have been carried out in CO-ADD laboratory (Brisbane, Australia).

Results and discussion. [1,2,4]Triazolo[4,3-*a*]quinazolin-5(4*H*)-ones **1-4** showed more than 80% inhibition of *Acinetobacter baumannii* growth and compounds **5** showed more than 80% inhibition of growth fungi *Cryptococcus neoformans*.



Conclusions. Several new [1,2,4]triazolo[4,3-*a*]quinazolin-5(4*H*)-one derivatives containing amide group attached by carbon or sulfur – carbon chain possess antimicrobial activity against *Acinetobacter baumannii* and fungi *Cryptococcus neoformans*.