SYNTHESIS OF NOVEL N-(4-ACETYLPHENYL) IMIDAZOLE DERIVATIVES

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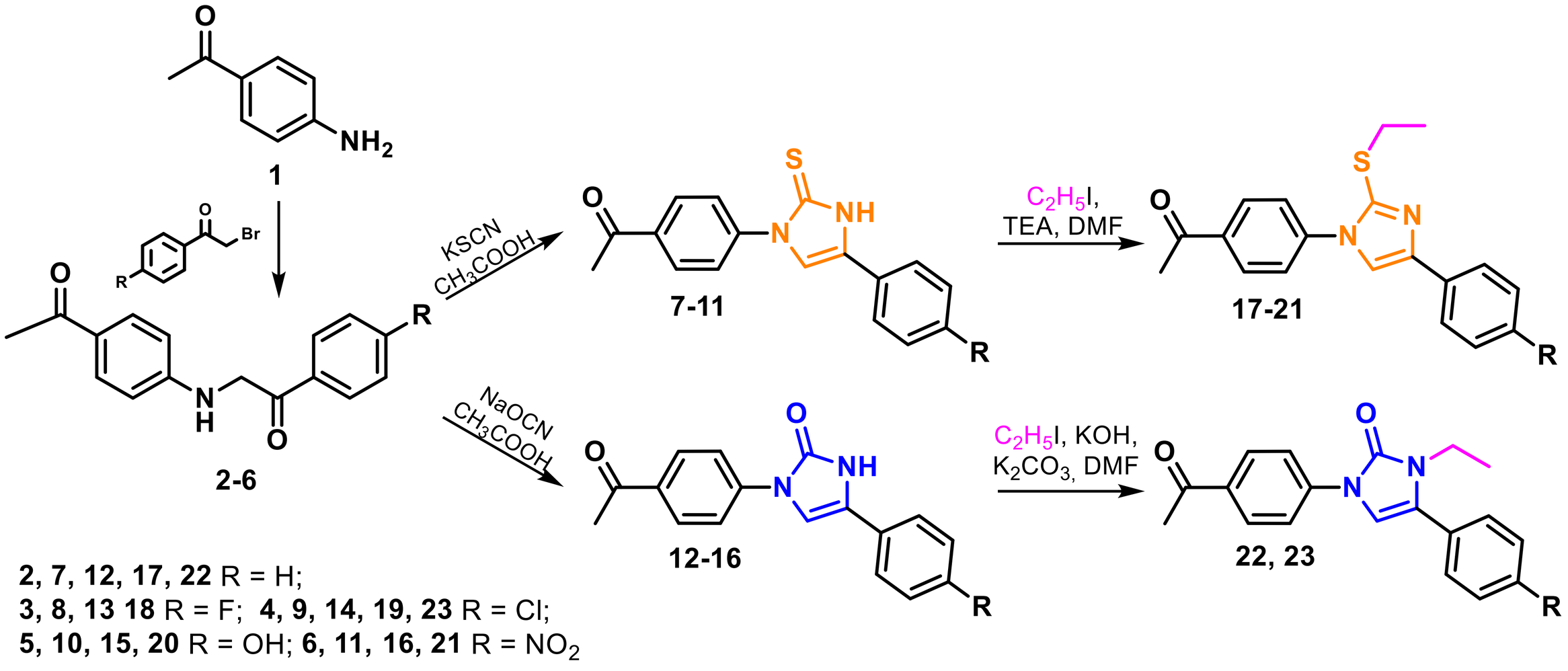
Microorganism drug resistance poses a significant global health threat, as pathogens such as bacteria, viruses, and fungi evolve to become less susceptible to existing antimicrobial treatments.

Imidazole fragment-bearing structures are important in medicinal chemistry due to their diverse biological activities. These compounds serve as key structural motifs in various pharmaceutical agents, exhibiting a wide range of therapeutic properties, including anti-inflammatory, anti-cancer, anti-microbial anti-fungal [1], and anti-viral activities [2,3].

The aim of this study is to synthesize new potentially biologically active oxo- and thioimidazole derivatives.

A widely used approach for producing imidazoles involves the conversion of α-amino ketones using cyanates or thiocyanates of alkali metals. The process entails reacting amino ketones **2-6** with sodium cyanate or potassium thiocyanate in acetic acid at reflux, resulting in the formation of imidazoles **7-16**. Alkylation of imidazole derivatives **7-16** led to obtaining more soluble compounds **17-23** (*Scheme 1*), which may have a higher chance of being efficiently biologically active.

Scheme 1



2, 7, 12, 17, 22 R = H;
3, 8, 13 18 R = F; **4, 9, 14, 19, 23** R = Cl;
5, 10, 15, 20 R = OH; **6, 11, 16, 21** R = NO_2

Conclusions

New potentially biologically active oxo- and thioimidazole derivatives were synthesized, and their biological activity evaluation now is in progress.

References
1.Balandis B., Mickevičius V., Petrikaitė V., *Pharmaceuticals* 2021, 15(4), 1158.
2.Buhler S., et al *J. Med. Chem*. 2011, 54(9), 3283.
3.Joshi, M.V., et al. *Org. Process Res. Dev.* 2020, 24(8), 1508.