

ANTI-INFLAMMATORY AND ANTI-DIABETIC ACTIVITY OF 4-NITROIMIDAZOLIUM 3,5-DI(AMINO/NITRO) BENZOATES AND 2-CARBOXY-5-NITROBENZOATES

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ABSTRACT

In this present work, anti-inflammatory and anti-diabetic activities of nineteen protic imidazolium salts with three different organic anions such as 3,5-Diaminobenzoates (5 examples, IMS-1, 5, 7-9), 3,5-Dinitro benzoates (7 examples, IMS-10, 12-17) and 2-Carboxy-5-nitrobenzoates (7 examples, IMS-28, 30-32, 34-36) in different concentrations (20, 40, 80, 200 & 400 µg/mL) were investigated. The *Diclofenac sodium* and *Acarbose* were used as standard drugs for anti-inflammatory and anti-diabetic activities respectively. The anti-inflammatory and anti-diabetic activities of protic imidazolium salts were also compared to their corresponding parent imidazoles. All the protic imidazolium salts with 3,5-Diaminobenzoates (IMS-1, 5, 7-9), 3,5-Dinitro benzoates (IMS-10, 12-17) and 2-Carboxy-5-nitrobenzoates (IMS-28, 30-32, 34-36) are showed very good to remarkable anti-inflammatory and good to excellent anti-diabetic activities compared to their corresponding parent imidazole and their standard drug.

Keywords: Imidazole; 4-Nitroimidazole; Imidazolium; Protic Ionic liquids; Anti-inflammatory activity; Anti-diabetic activity.

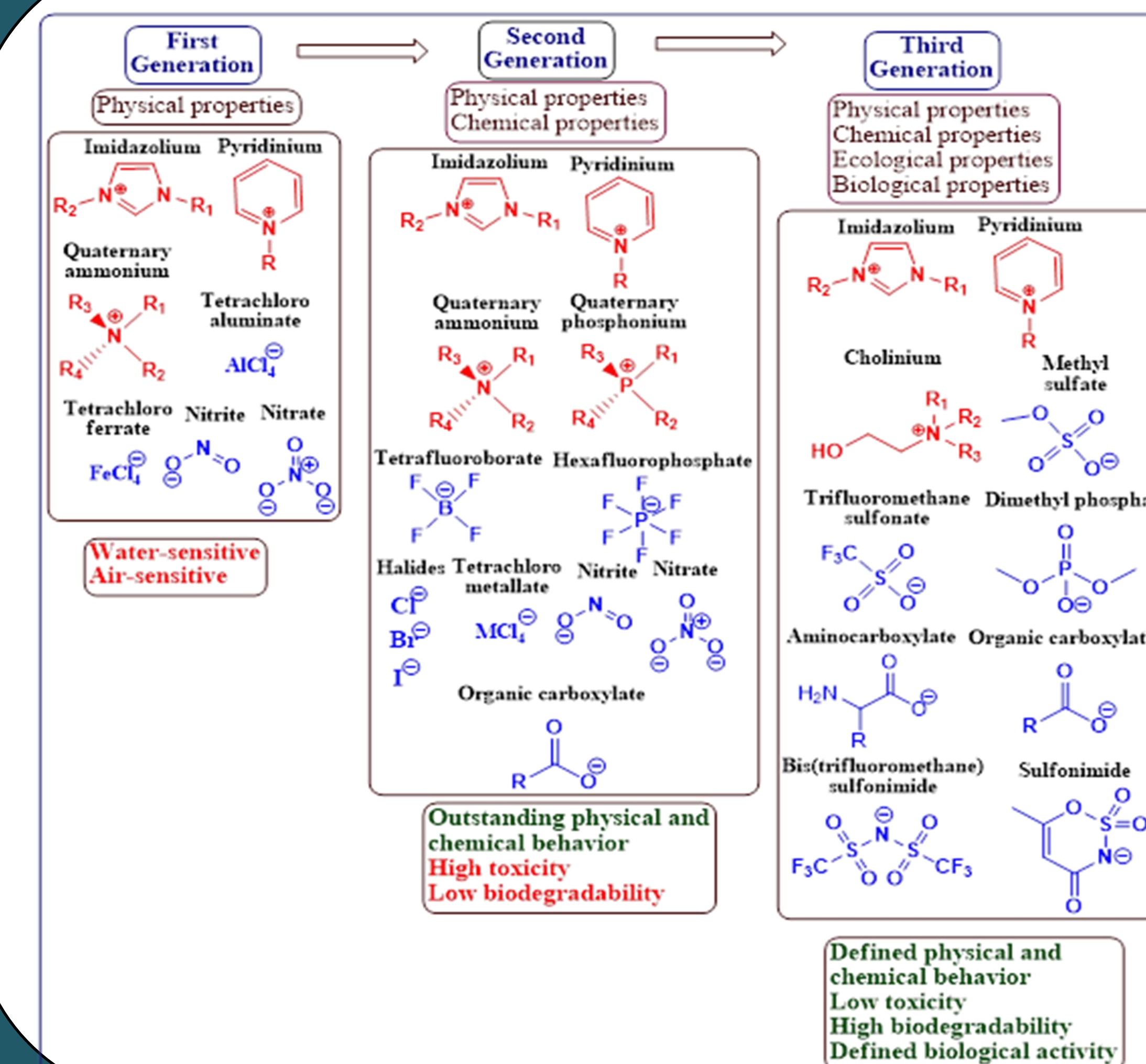
INTRODUCTION

What Are Imidazolium Salts?

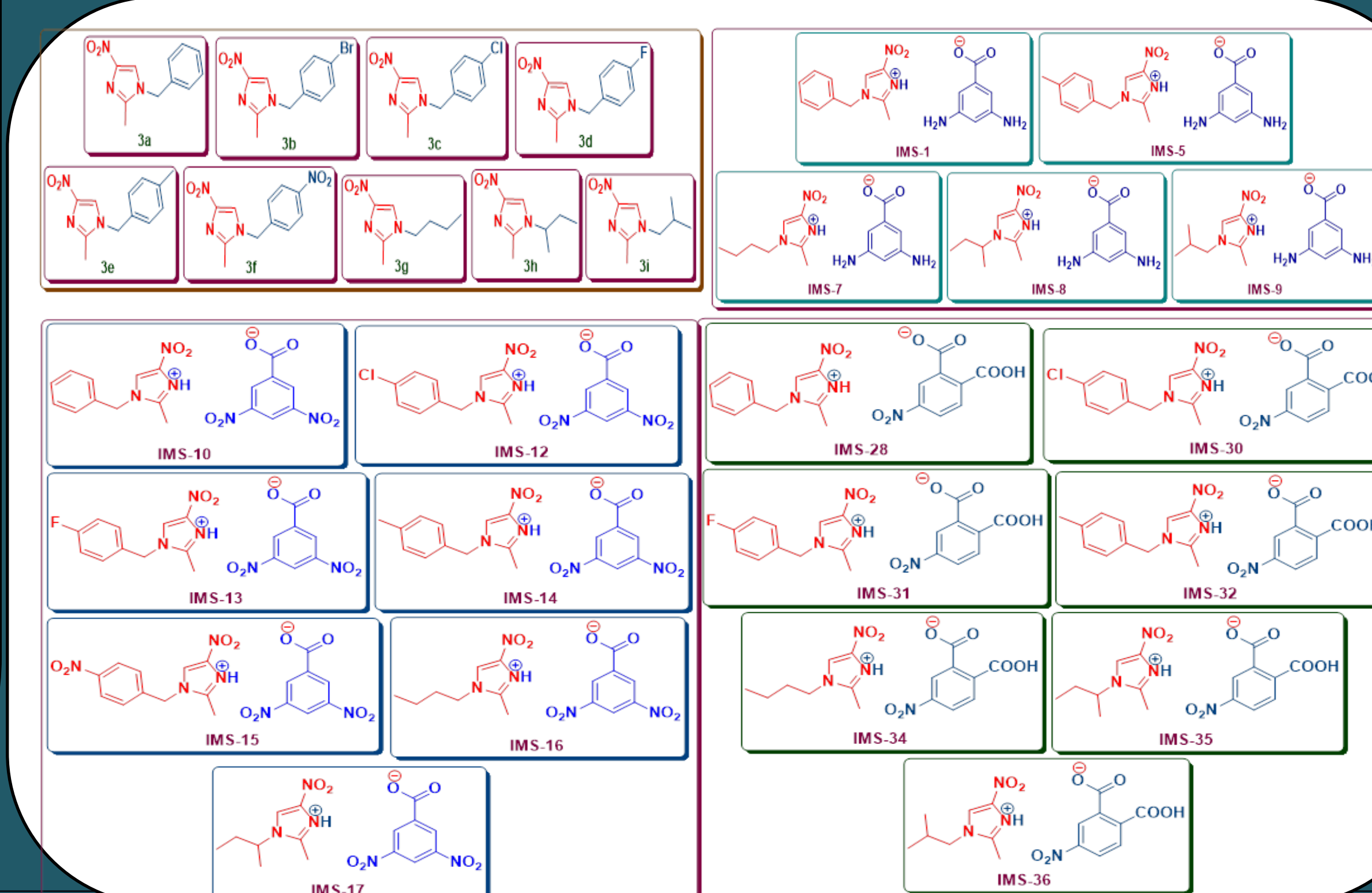
Hide Sources Simple Document Imidazolium salts are a class of organic compounds that contain an imidazole ring coupled with a positively charged cation, typically an alkyl group. These salts are characterized by their unique chemical and physical properties, making them versatile and widely used in various fields. Imidazolium salts exhibit excellent solubility in polar solvents like water, making them suitable for applications as catalysts, ionic liquids, and electrolytes in electrochemical devices. They also possess thermal stability and can be easily functionalized to tailor their properties for specific purposes. Due to their diverse range of applications, imidazolium salts have gained significant attention in areas such as chemical synthesis, material science, pharmaceuticals, and energy storage systems.

Future Prospects And Ongoing Research On Imidazolium Salts

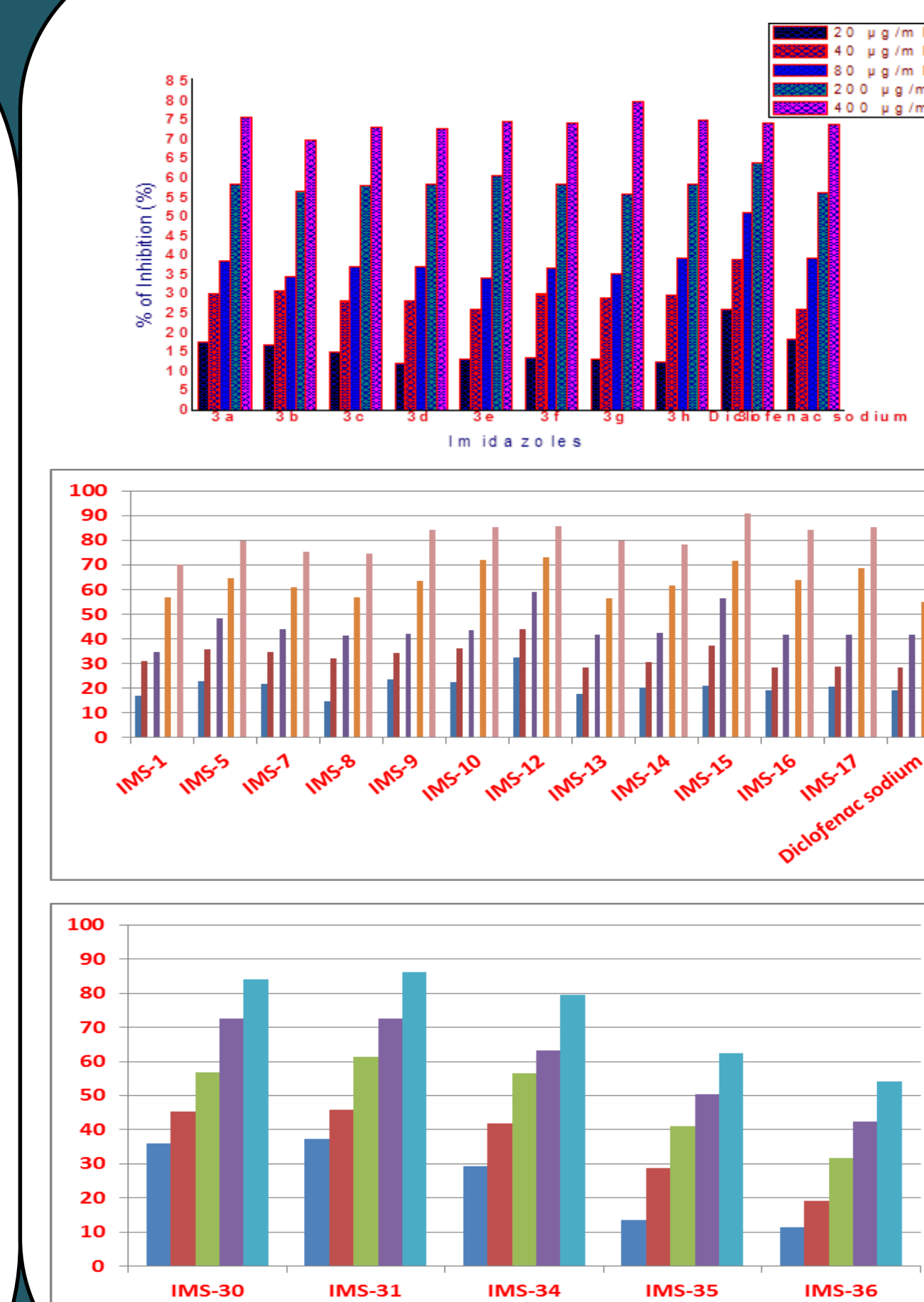
Future prospects and ongoing research on imidazolium salts show promising avenues for their application in various fields. Imidazolium salts have garnered attention for their unique properties, such as high thermal stability and tunable solubility. Researchers are exploring their potential as catalysts in organic synthesis, where they exhibit excellent catalytic activity and selectivity. Moreover, the ability of imidazolium salts to form stable ionic liquids has opened new possibilities in green chemistry and materials science. Ongoing studies aim to optimize their performance by modifying the structure of imidazolium cations and anions, thus expanding their range of applications. Additionally, investigations into the toxicology and environmental impact of these compounds are crucial to ensure their safe utilization in industry and beyond.



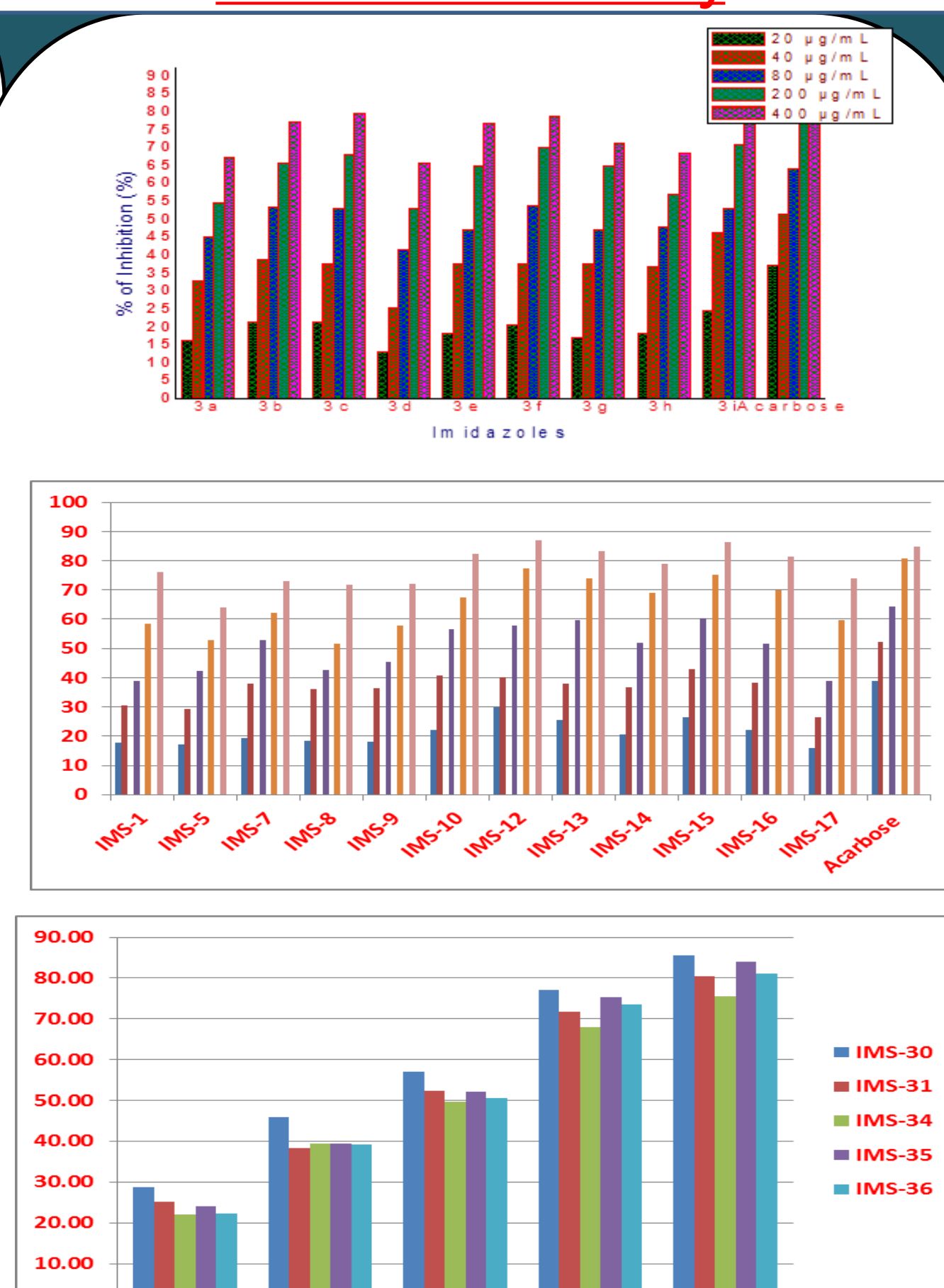
RESULTS AND DISCUSSION



Anti-inflammatory activity



Anti-daiabetic activity



CONCLUSION

- ✓ All imidazolium salts were showed an excellent anti-inflammatory and anti-diabetic activity compared to their corresponding parent compounds and tested standard drugs.
- ✓ Among them, Nitro group containing organic anion incorporated imidazolium salts shown an excellent activity.

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REFERENCES

1. D. Satheesh et al., *Chemical Data Collections* 28 (2020) 100406; *Results in Chemistry* 2 (2020) 100033; *Chemical Data Collections*. 33 (2021) 100726.
2. N. Afsar et al., *Journal of Molecular Structure*. 2021; 1244; 130967; *Journal of the Indian Chemical Society*. 2022; 99(9); 100655.