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Synthesis and characterization of vanadium hybrid materials with physiological substrates as potential insulin mimics in Diabetes mellitus II

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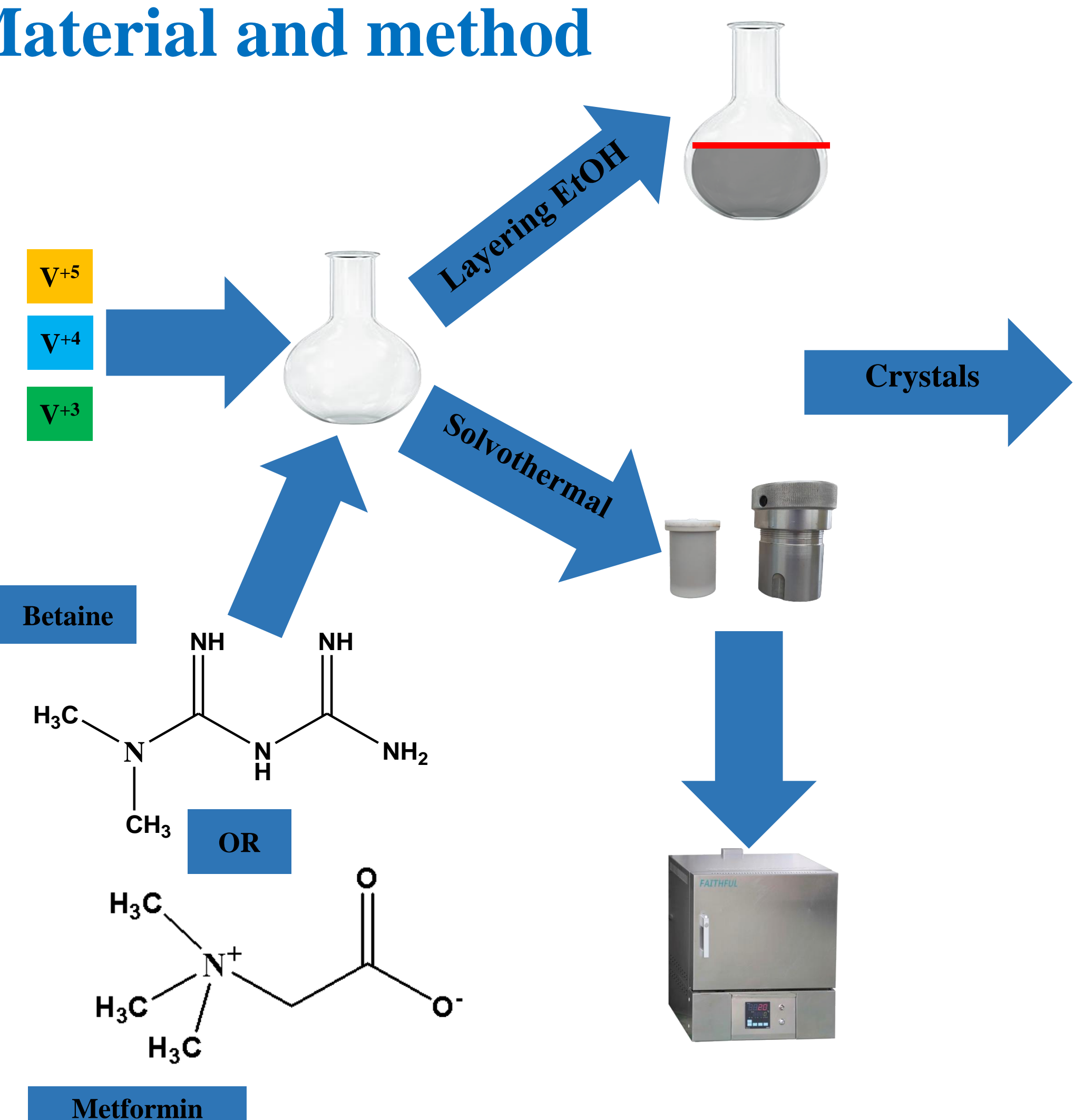
Abstract

In an effort to synthesize and characterize (biologically and physicochemically) hybrid Vanadium materials of biological significance to human physiology, research was launched in our Laboratory, using various oxidative states of Vanadium (V(III,IV,V)) and biologically relevant ligands, thereby leading to crystalline materials to be used as potent metallodrugs. Physicochemical characterization of the arising compounds provided insight, regarding the solution and solid-state properties, while in vitro experiments in a dose- and time-dependent fashion, provided the biotoxicity profile of the materials, under very specific conditions.

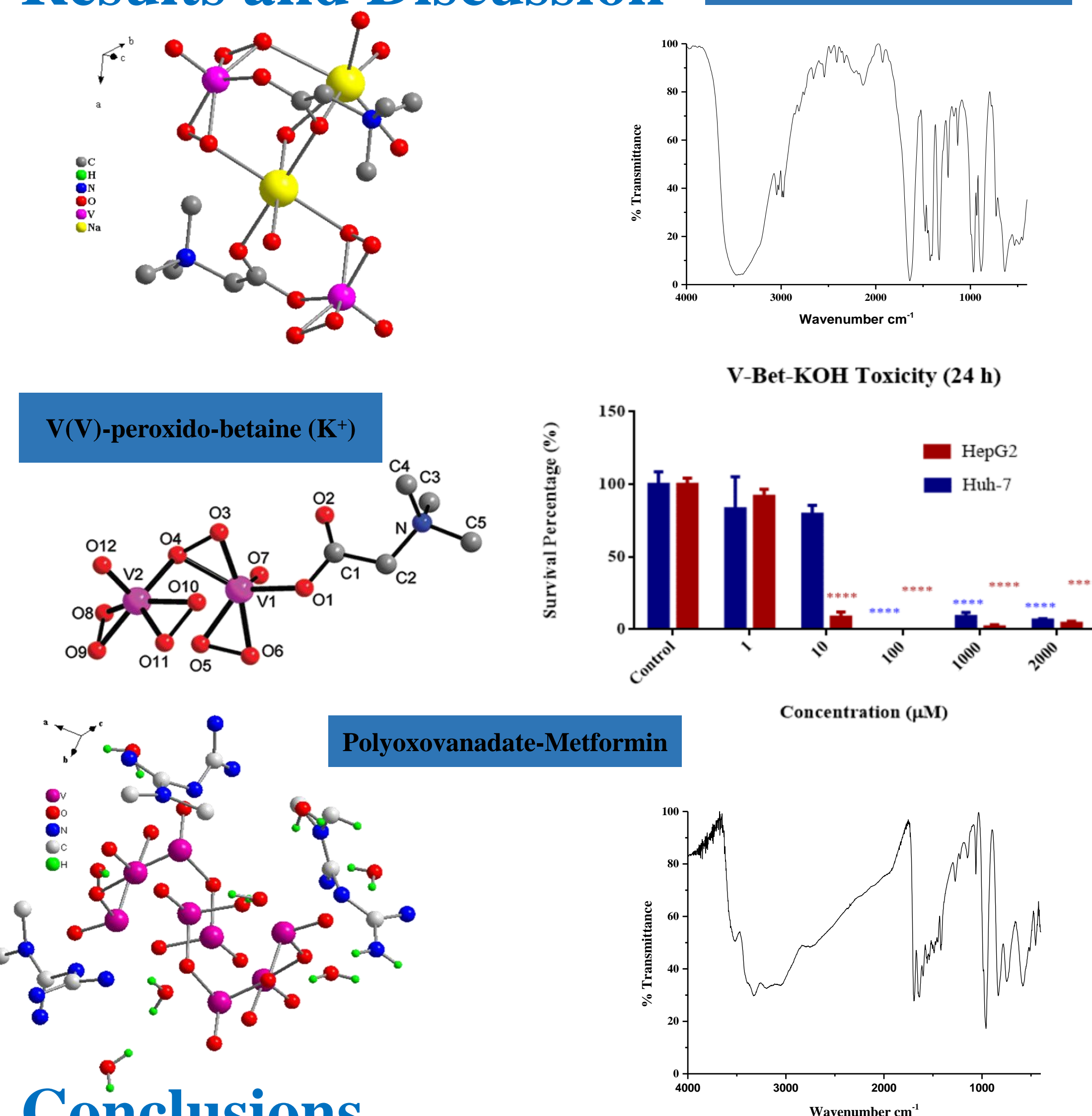
• Introduction

Vanadium is a transition metal, well-known for its industrial, therapeutic, and environmental applications. The biologically relevant oxidation states (V(IV,V)) can coordinate with physiologically relevant ligands of biological importance, in various geometries, thereby increasing the specificity of the reactivity at the biological level.

• Material and method



• Results and Discussion



• Conclusions

- ✓ Various hybrid vanadium-peroxido-betaine materials were (re)synthesized and characterized using elemental analysis, FT-IR and X-Ray crystallography.
- ✓ In vitro experiments show high toxicity against cancerous liver cell-lines (HepG2, Huh-7)

• References

- E. Kioseoglou et al., *Coord. Chem. Rev.* 301-302 (2015) 87-105.
- C. Gabriel et al., *Inorg. Chem.* 51 (11) (2012) 6056-6069.