

Synthesis and Characterization of New 'Melen Complexes'

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Keywords: Melen complexes, Meldrum acid, Schiff base complexes

INTRODUCTION

Metal complexes with Schiff base (SB) play a pivotal role in the research and development of main group and transition metal coordination chemistry.¹ There have been numerous reports of transition metal complexes containing N₂O₂-tetradentate ligands² (salen-type SB ligands), but only one report of complexes containing related ligands derived from Meldrum's acid (MA) and phenylenediamines or with aliphatic 1,2-diamines³ (Figure 1). By structural analogy with salen complexes, these complexes are termed of 'melen complexes'.

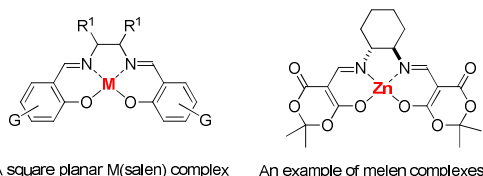


Figure 1. Schiff base complexes.

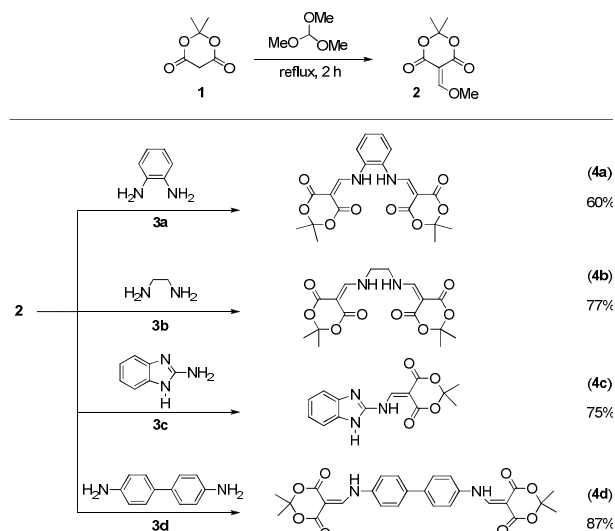
MA and its derivatives have been recognized as versatile reagents in organic synthesis and nowadays as a potentially useful compounds in the development of novel metal-chelating agents.³ Herein we describe the design and synthesis of news examples of 'melen complexes', which can potentially be used as catalysts and/or as photo- and electroluminescent materials in the future.

RESULTS AND DISCUSSION

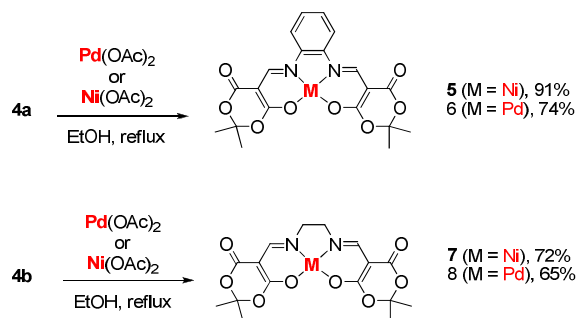
Our work began with the preparation of the Michael acceptor **2** by the reaction between MA **1** and trimethyl orthoformate. This step was always performed immediately before use. The next part of the synthesis was the preparation of ligands **4**, aminomethylene derivatives of Meldrum's acid.³ Therefore, the reactions of **1** with amines **3** to give the ligands **4** in good yields (Scheme 1).

In the last part of the synthesis, we prepared the 'melen complexes' **5-8** by the reaction between **4** and the corresponding metal acetate in ethanol under reflux (Scheme 2). The compound **4d** did not form any complex and the structure obtained from **4c** has not been resolved yet. The structures of new complexes **6**, **7** and **8** were characterized by elemental analysis, NMR and IR spectroscopic studies.

14th Brazilian Meeting on Organic Synthesis – 14th BMOS – September 01-05, 2011-Brasília, Brazil



Scheme 1. Synthesis of ligands derivatives of MA.



Scheme 2. Synthesis of new 'melen complexes'

CONCLUSION

We have synthesized new examples of a novel class of SB complexes that are prepared in good yields and easy purification using readily available amines as substrates.

ACKNOWLEDGEMENTS

We thank the UFPB for support of our studies.

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