

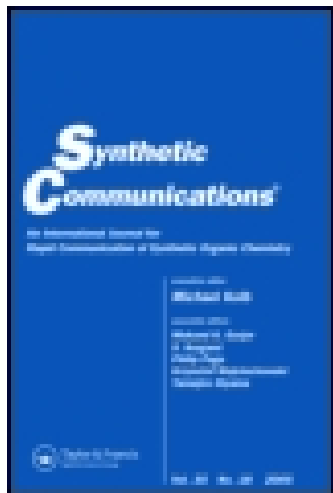
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### MoO<sub>2</sub>(acac)<sub>2</sub>-A Mild and Efficient Catalyst for the Deprotection of Acetals

M. Lakshmi Kantam<sup>a</sup>, V. Swapna<sup>a</sup> & P. Lakshmi Santhi<sup>a</sup>

<sup>a</sup> Homogeneous Catalysis Discipline Indian Institute of Chemical Technology, Hyderabad, 500 007, INDIA  
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**MoO<sub>2</sub>(acac)<sub>2</sub> - A MILD AND EFFICIENT CATALYST FOR THE  
DEPROTECTION OF ACETALS**

**M. Lakshmi Kantam\*, V. Swapna and P. Lakshmi Santhi**

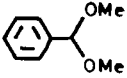
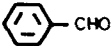
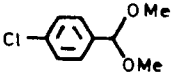

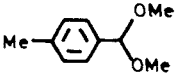

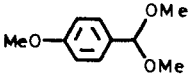

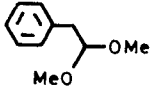
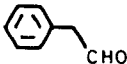
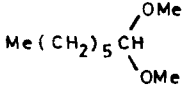
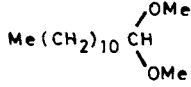
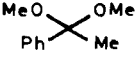
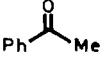
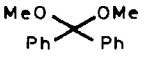
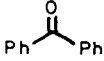
Homogeneous Catalysis Discipline  
Indian Institute of Chemical Technology  
Hyderabad 500 007, INDIA

**Abstract :** Molybdenyl(VI) acetylacetonate is an effective catalyst for the deprotection of acetals into the corresponding aldehydes and ketones, in good yields.

The design of new catalysts for the deprotection of acetals in a mild and selective manner into aldehydes or ketones is a challenging and rewarding undertaking in organic synthesis. Acid catalysed hydrolysis is the widely used method for cleavage. Several catalysts such as HCl<sup>1</sup>, CH<sub>3</sub>COOH<sup>2</sup>, Oxalic acid<sup>3</sup>, Tartaric acid<sup>4</sup>, Dowex-50 (H<sup>+</sup> resin)<sup>5</sup>, N-hydroxybenzenesulfonamide<sup>6</sup>, Trityltetrafluoroborate<sup>7</sup>, DDQ<sup>8</sup> and Acetylchloride-SmCl<sub>3</sub><sup>9</sup>, have been reported for the cleavage of Acetals.

The low cost, ease of handling and our earlier experience on MoO<sub>2</sub>(acac)<sub>2</sub><sup>10</sup> prompted us to examine such a possibility with molybdenyl acetylacetonate complex.

Table.  $\text{MoO}_2(\text{acac})_2$  catalyzed deprotection of acetals

ENTRY	ACETAL	PRODUCT	YIELD (%) <sup>a</sup>
1			91
2			85
3			95
4			92
5			72
6		$\text{Me}(\text{CH}_2)_5\text{CHO}$	70
7		$\text{Me}(\text{CH}_2)_{10}\text{CHO}$	75
8			83
9			80

<sup>a</sup> - Characterized by NMR and IR

Now we report here a simple and efficient procedure for cleavage of Acetals to afford the corresponding aldehydes or ketones in high yields (Table).

In conclusion, the reactions are clean, cheap and rapid with high yields under mild conditions.

### General Procedure

To a solution of 0.16g (1 mmol) of acetal (Table, entry 3) in 10 ml CH<sub>3</sub>CN, 0.032g (0.1 mmol) of MoO<sub>2</sub>(acac)<sub>2</sub> (Aldrich) was added. The mixture was stirred under nitrogen. After 4h, the solvent was evaporated and chromatographed (benzene) on silica gel to give p-Tolualdehyde (yield 0.132g, 91%).

### References

1. Ueberwasser, H., Heusler, K., Kalvoda, J., Meystre, Ch., Wieland, P., Anner, G., Wettstein, A., Helv. Chim. Acta. 1963, 46, 344.
2. Niwa, H., Hasegawa, T., Ban, N., Yamada, K., Tetrahedron, 1987, 43, 825.
3. Bohlmann, F., Inhoffen, E., Herbst, P., Chem. Ber. 1957, 1661.
4. Hurd, C.D., Saunders, W.H. Jr., J. Am. Chem. Soc. 1952, 74, 5324.
5. Ballou, C.E., Fischer, H.O.L., J. Am. Chem. Soc. 1956, 78, 1659.
6. Hassner, A., Wiederkehr, R., Kascheres, A.J., J. Org. Chem., 1970, 35, 1962.

7. Barton, D.H.R., Magnus, P.D., Smith, G., Zurr, D., J. Chem. Soc., Chem. Commun., 1971, 861; Barton, D.H.R., Magnus, P.D., Smith, G., Streckert, G., Zurr, D., J. Chem. Soc. Perkin Trans. 1, 1972, 542.
8. Tanemura, K., Suzuki, T., Horaguchi, T., J. Chem. Soc., Chem. Commun., 1992, 979.
9. Wu, S.-H., Ding, Z.-B., Synth. Commun., 1994, 24, 2173.
10. Lakshmi Kantam, M., Lakshmi Santhi, P., Synlett., 1993, 429; Lakshmi Kantam, M., Lakshmi Santhi, P., Synth. Commun., 1994, 961.

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