



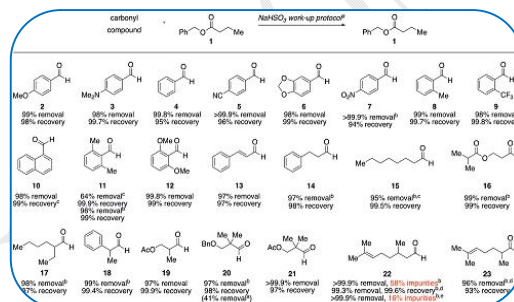
## AS A GREEN COMPOUND FOR THE ADAPTATION OF ALDEHYDES AND KETONES TO GEM-DIHYDROPEROXIDES USING AQUEOUS 30% H<sub>2</sub>O<sub>2</sub> WITH REFERENCE TO BORIC ACID

Mohit R. Joshi

M.Sc. Organic Chemistry, At. Post Himmatnagar, Gujrat.

### ABSTRACT :

Mani-dihydroperoxide is known to be an important arbitrator in the synthesis of anti-malarial malaria, due to almost constant peroxide derivatives of aldehydids and ketones. Also, because of the high levels of peroxidic oxygen, some of these compounds are used in oxidation reactions as solid, efficient, and powerful oxidants. Generally, these compounds are synthesized by the precocidation of aldehydes and ketones. Therefore, in this work, the importance of bee-dihydroperoxide has been explored as a effective, cheap, commercially available, green, and rich solid catalyst of boric acid, which is 30% hydrozone solvent in acetonitis, peroxide at room temperature, for aldehydes and peroxides of ketones. This work has been studied both aromatic and alfactory aldehydes and ketone types. The response was run in a few times. High yield and net refinement of products were obtained. In all the reactions, no sub-product has been observed. This method is handy, mild, almost green, efficient and available.



**KEYWORDS :** Aqueous 30% H<sub>2</sub>O<sub>2</sub>, Mani-dihydroperoxide

### INTRODUCTION

Gem-dihydroperoxide (DHP) has been studied as almost stable derivatives of Ketones and Aldehyde, which has been attributed to their participation in anti-malaria drugs in peroxide. In addition, these compounds are important or central to the synthesis of some peroxide such as tetroxasens, silatoroxines, spirobyspecetales, bisporoxetelate, and 1,2,4,5 tetroxsecocoqualcans. Bee di-hydroperoxide has been used as an initiative for basic polymerization processes, as a precursor to the synthesis of decarboxylic acid esters and oxidation of  $\alpha$ ,  $\beta$ -unsaturated cetones, antioxidant oxidation of 2-occulted oxidation reactions of 1,4 as oxidants - naphotoquinone, oxidation of sulfide and other From the oxidative Driya reaction as desired oksidivharegentsa. There are three major reporting methods for synthesis of bee-dihydro peroxide: (i) Ozoneolysis of cetoneanol ether or  $\alpha$ -olefines in the presence of inflammatory H<sub>2</sub>O<sub>2</sub> (ii) Kettle's reaction with H<sub>2</sub>O<sub>2</sub> or BF<sub>3</sub>.Et<sub>2</sub>O in presence of tangstic acid, and (iv) Acid Charonization of Ketones using solvents All, unfortunately, these methods include the use of harmful H<sub>2</sub>O<sub>2</sub> and extra acids, mixing peroxide products, poor production, and limited substrate range. In addition, the presence of ozone-sensitive groups in sub-optical and low selectivity has more limitations in ozoneolysis response. Boric acid is commercially available which is salable in water and is widely used as an effective catalyst in organic synthesis.

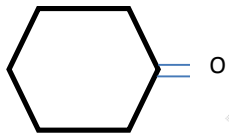
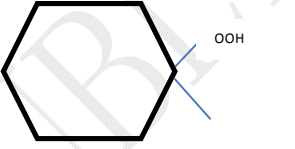

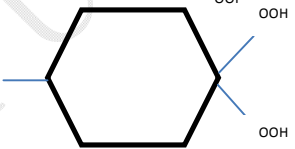
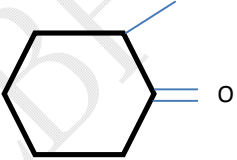
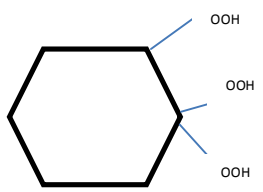
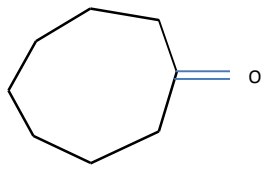
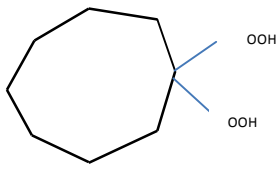
**RESULT AND DISCUSSIONS ON LABORATORY EXPERIMENT:**

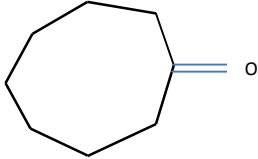
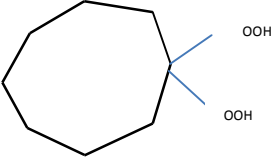
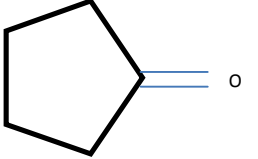
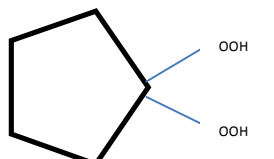
To set the state of the reaction, all feedback parameters such as model reactions for the synthesis of 1,1-dihydroperoxyoxiclohexen were studied and the results were summarized in Table 1. Note that the yield and reaction time best results were provided by MCN as a bankrupt at room temperature with 10 MOL catalysts loading. We started studying reaction feasibility by using various aliphatic and aromatic aldehydes and ketones (table 2) in optimized conditions (A. 30% H<sub>2</sub>O<sub>2</sub> (1 ml), 0.1 mmol boric acid, MCN (4 ml), RT). According to summarized results in Table 2, in general, Alaptic Ketone GL responds faster than aromatic Ketone V-Z to make the corresponding mam-dihydroperoxide in high yields.

**Table 1.1 Showing of reaction constraints for the realization of 1,1-dihydroperoxyoxiclohexane**

Sr. No.	Boric Acid	Solvent	Yield (%)	Time (min)
1.	0.10	CCL <sub>4</sub>	45	145
2.	0.10	CH <sub>3</sub> CN	96	30
3.	0.10	Et <sub>2</sub> O	78	60
4.	0.05	CH <sub>3</sub> CN	90	45
5.	0.15	CH <sub>3</sub> CN	92	25
6.	0.10	CH <sub>2</sub> Cl <sub>2</sub>	40	120
7.	0.10	EtOAC	80	40
8.	0.20	CH <sub>3</sub> CN	73	25
9.	0.15	CH <sub>3</sub> CN	92	25

**Table 1.2 Effect of Boric Acid for Synthesis of Gem-dihydroperoxides**

Sr. No.	Aldehyde	Product	MP	Time (min)	Yield (%)
1			Oil	32	98
2			Oil	42	92
3			Oil	37	93
4			Oil	35	95

5			65-67	37	93
6			Oil	33	95

According to summarized results in Table 2, in general, Aliphatic Ketone GL responds faster than aromatic Ketone V-Z to make the corresponding gem-dihydroperoxide in high yields. In fragrant substrates, the carbonial group reduces the action of nucleophilic attack against the fennel ring compounding as compared to aliphatic carbonibles, which is about 300 min. afterwards, benzophenone (table 2, entry 6) was recovered. Interestingly, preventable aromatic aldehydes and ketones do not respond by electron-retrograde segments, or do not react too long with very low yields (Table 2, Entry 3 and 4). Zmitich and C-Workers have suggested that the condition of infection in the peroxidation of aldehydes and ketones. In addition, it is interesting that only one atom of the hydrogen peroxide to the carbonyl group occurs in the reactions of aliphatic aldehydes such as 5 and 6 entries (Table 2), which is expected to increase the probability of the 1,1-dihydroperoxide derivatives builds. DHP This inspection has been reported before all related published documents.

**Table 1.3 Resulted Components with Comparing of Peroxidation Cyclohexanone**

Sr. No.	Catalyst	Time	Condition	Concentration of H <sub>2</sub> O <sub>2</sub>	Yield
1	Re <sub>2</sub> O <sub>7</sub>	32	r.t	50	81
2	NaHSO <sub>4</sub> SiO <sub>2</sub>	25	r.t	50	99
3	Boric Acid	35	r.t	30	98
4	CAN Reagent	125	r.t	55	89
5	Bi(OTf) <sub>3</sub>	20	r.t	30	80
6	Phosphomolybdic Acid	160	r.t	55	97
7	Silica Sulphuric Acid	25	r.t	30	99

### CONCLUSION:

Commercially available and non-toxic catalysts to convert the conversion of Ketone and Aldehyde to the related gem-dihydroperoxide. This reaction runs smoothly with short reaction times at room temperature to produce products in high responses. Boric acid makes process less costly, cost-effective and environmentally friendly as a cheap and non-toxic catalyst.

### REFERENCES:

- H.S. Kim, Y. Nagai, K. Ono, K. Begum, Y. Wataya, Y. Hamada, K. Tsuchiya, A. Masuyama, M. Nojima, K.J. McCullough, J. Med. Chem. 44 (2001) 2357.  
 Van Tonder, Johannes. (2014). Gem-Bishydroperoxides. Synlett. 25. 1629-1630. 10.1055/s-0034-1378210.  
 R. Amewu, A.V. Stachulski, S.A. Ward, N.G. Berry, P.G. Bray, J. Davies, G. Labat, L. Vivas, P.M. O'Neill, Org. Biomol. Chem. 4 (2006) 4431.

- H.S. Kim, Y. Nagai, K. Ono, K. Begum, Y. Wataya, Y. Hamada, K. Tsuchiya, A. Masuyama, M. Nojima, K.J. McCullough, J. Med. Chem. 44 (2001) 2357.
- T. Ito, T. Tokuyasu, A. Masuyama, M. Nojima, K.J. McCullough, Tetrahedron 59 (2003) 525.
- D. Azarifar, Z. Najminejad, K. Khosravi, Synth. Comm. 43 (2013) 826.