**INTRODUCTION**
Organic reactions performed under microwave irradation (MWI) have some significant advantages in comparison with the conventionally heated ones, such as much shorter reaction times, better selectivity’s and higher yield. The use of a clean, efficient and economical solvent free procedure combined with an immobilization on solid support reagents technique, which gives good dispersion of the active reagent sites, associated selectivity and easier work – up is an environmentally benign procedure preventing release reaction residues into the environment.

The synthesis of biaryl, compounds present in a large number of natural products, is a subject of current interest. In this family the chiral 1,1-binaphthyl derivatives are of relevance mainly due to their applications as inducers for stereo selective reactions as stationary phase and reagent for chiral NMR resolution however some difficulties still exist such as unsatisfactory yields, long reaction times, strong acidic conditions, highly expensive reagents. The required solvent or the reagents used are toxic and hazardous which causes environmental pollution. Therefore to overcome these limitations, the discovery and development of a new, simple,
green, one pot and efficient protocol for the preparation of 1,1- binaphthalene derivatives under mild and practical condition of prime interest.

Several procedure have been reported for the synthesis of binaphthyl derivatives the most commonly used one being oxidative coupling. The reactions are carried out with a variety of oxidants\textsuperscript{8-12}, either in organic solvents\textsuperscript{13}, aqueous solution\textsuperscript{14} or in the solid state\textsuperscript{15}. Symmetric and asymmetric biaryl can be synthesized by the electron transfer (ET) S\textsubscript{RN1} mechanism\textsuperscript{16-17} through the substitution of a halo aromatic substrate by a \(\beta\)-naphthol and \(\beta\)-naphthylamine\textsuperscript{18}. Here we have determined that the \(\beta\)-naphthoxide anion (1) reacts with aromatic radicals’ regiospecifically by coupling at the \(C_1\) of its naphthyl ring\textsuperscript{18}.

\[
\begin{align*}
\text{O}^-\text{Ar} \text{X} & \quad \text{NH}_3(\text{Liq.}) \\
\text{Ar} \quad \text{O}^- \\
\end{align*}
\]

The Scope of this reaction -The scope of the reaction towards the synthesis of 1,1 – binaphthyl derivative mainly 1,1’-binaphthalenyl-2,2’ – diol (BINOL) (3a), and 2 – methoxy-1,1’-binaphthyl (3b). For this we performed the reaction of 1- iodo-2- hydroxy naphthalene (2b) with \(\beta\)- naphthol (2a) in presence of liquid ammonia under microwave irradiation to obtain good yield.

RESULTS AND DISCUSSION

The microwave irradiation reaction of \(\beta\)-naphthol with 1-iodo -2-naphthol (2b) or 1- iodo -2-methoxynaphthalene (2c) in presence of liquid ammonia afforded good yields of 1, 1’-binaphthalenyl-2, 2’-diol (3a) (70%) or 2- methoxy-1, 1’-binaphthalenyl-2-ol (3b) (65%) respectively
Experimental section

General procedure

$^1$HNMR & IR spectral analysis is done by CDRI Lucknow. Potentiometric titration of iodide ion was performed in a pH meter using an Ag/Ag+ electrode. Melting point were not corrected column chromatography in was performed on silica gel (70-278 ASTM) progress of reaction is determined by thin layer chromatography Material: β-naphthol(2a), 1- Iodo – 2 – naphthol(2b), liquid ammonia, 1-iodo-2-methoxy naphthalene (2c), methanol, ethyl acetate and THF.

Heating a mixture of 1- iodo-2- naphthol (2b) or 1-iodo-2-methoxy naphthalene (2c), β-naphthol(2a) and liquid ammonia in microwave oven at 180°C for 18 min. or 20 min. afforded good yield of 1,1-binaphthalene derivatives (3a) or (3b) respectively. The product was dissolved in ethyl acetate (100ml) and washed with water. Organic layer is dried over Na$_2$SO$_4$ and evaporate solvent under reduced pressure. The product was isolated by column chromatography on silica gel with ethyl acetate and recrystallised by using methanol.

2, 2-dihydroxy-1, 1-binaphthalene (BINOL) (3a):- mp 213-218°C(literature-213-216°C).

$^1$HNMR-δH 7.14-7.19(2H, m), 7.26-7.46(6H, m) 7.94-8.04(1H, m) m/z-287(35.7); 286(100.0); 285(30.9); 269(11.4); 260(20.3); 240(20.4); 231(11.0); 227(11.2); 134(15.7); 120(42.3); 119(45.6); 118(17.3); 113 (17.2).
2'-Methoxy-1,1'-binaphthyl-2-ol (3b):- $^1$HNMR $\delta_H$ 3.78(3H,s); 4.91(1H,s); 7.01-7.51 (8H,m); 7.84-7.93(3H,m); 8.05 (1H,d). $m/z$ 302 (16.5); 301 (100.0); 270(7.6); 241 (7.2), 208 (3.1).

CONCLUSION
In conclusion, we have illustrate that microwave irradiation is a new, efficient and green path for the synthesis of 1, 1 – binaphthyl derivatives. The distinguished features of this method are shorter reaction time easy workup process, eco-friendly, excellent yield, and effective recovery of product than other methods.

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