

Abstract. have played an significant role in

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Curcumin, mainly isolated from turmeric, for long is known for its anti-inflammatory and antioxidant activity. It is also known to be effective against neoplasms, Alzheimer's disease, Hodgkin's disease. Large numbers of references are available in literature about its biological activity and mode of action etc.

Contrary to the popular belief that turmeric to be used only in household or as a medicine, we found an entirely different dimension to the whole idea of its activity. Curcumin is found to be active as catalyst. When complexed with palladium, it acts as a catalyst for carbon carbon coupling reactions, which is integral part of organic chemistry. It catalyzes efficiently the Heck and Suzuki reactions almost upto 90-95%. The respective products have been isolated in good yield. Thus, curcumin is found to act as an efficient ligand in catalysis study.

Keywords: Curcumin; Palladium Acetate; Heck reaction; Suzuki

reaction Introduction Several carbon-carbon bond forming reactions like Heck, 1-6 Suzuki, 7-11 Sonogashira, 12-16 Stille, 17-20 Hiyama, 21 Negishi, 22 Kumada, 23 Murahashi, 24 have been developed over the years. Amongst them, the Heck and Suzuki reactions²⁵⁻³⁰ are the most studied coupling reactions as these reactions have played an significant role in synthetic organic chemistry and widely used for synthesis of intermediates for pharmaceuticals or fine chemicals. ³¹⁻³³ A number of catalysts based on various ligands and metal combinations have been used for these reactions.

1-11, 25-30 Literature survey displays numerous choices of ligands in the field of catalysis.

Most of them are typically synthesized with planned study and/or with specific intention. However, we found a naturally occurring curcumin, commonly used in kitchen or as a medicine, can also be used in organic reaction. Turmeric obtained from the root of *Curcuma longa*³⁴ known for its anti-inflammatory and antioxidant activity. It is also known to be effective against Alzheimer's disease, Hodgkin's disease etc. 35-38 Figure 1 Curcumin, A highly conjugated system (preferably in enolate form), hence shows strong orange-yellow colour. Curcumin (Figure 1), a major constituent isolated from turmeric is found to be active as catalyst for coupling reactions when complexed with palladium acetate (Figure 2). It catalyzes efficiently the Heck and Suzuki reactions almost up to 90-95%. The respective products have been isolated in fair to excellent.

Figure 2. Pd(OAc)₂-curcumin Herein, a highly efficient protocol of Pd(OAc)₂-curcumin catalysed Heck and Suzuki reaction using N, N-dimethylformamide (DMF) as solvent and K₂CO₃ as base completing in just one hour (Scheme 1) is reported.