Palladium-Catalyzed Cross-Coupling of Triorganoindium Reagents

Significance: The authors demonstrate that triorganoindium reagents react selectively with \( N \)-benzyl-2,4,5-triiodoimidazole under palladium catalysis to give the corresponding C-2-arylated coupling products in good yields. These products can further be used in a subsequent double cross-coupling to afford trisubstituted imidazoles in good yields.

Comment: This methodology was further applied to the synthesis of neurodazine, a biologically active compound which is able to specifically induce neurogenesis of non-pluripotent myoblasts and the cells derived from mature human skeletal muscle.

Selected examples:

\[
\begin{align*}
&\text{\( \text{Bn} \)} & \text{\( \text{I} \)} & \text{\( \text{Ar, HetAr, alkynyl} \)} \\
&\text{\( \text{Bn} \)} & \text{\( \text{Ar, HetAr, alkynyl} \)} & \text{\( \text{I} \)} & \text{\( \text{F} \)} & \text{\( \text{MeO} \)} & \text{\( \text{O} \)} & \text{\( \text{MeO} \)}
\end{align*}
\]

83% yield

78% yield

83% yield

98% yield

90% yield

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