

rasagiline

monoamine oxidase B inhibitors

dynamic kinetic resolution

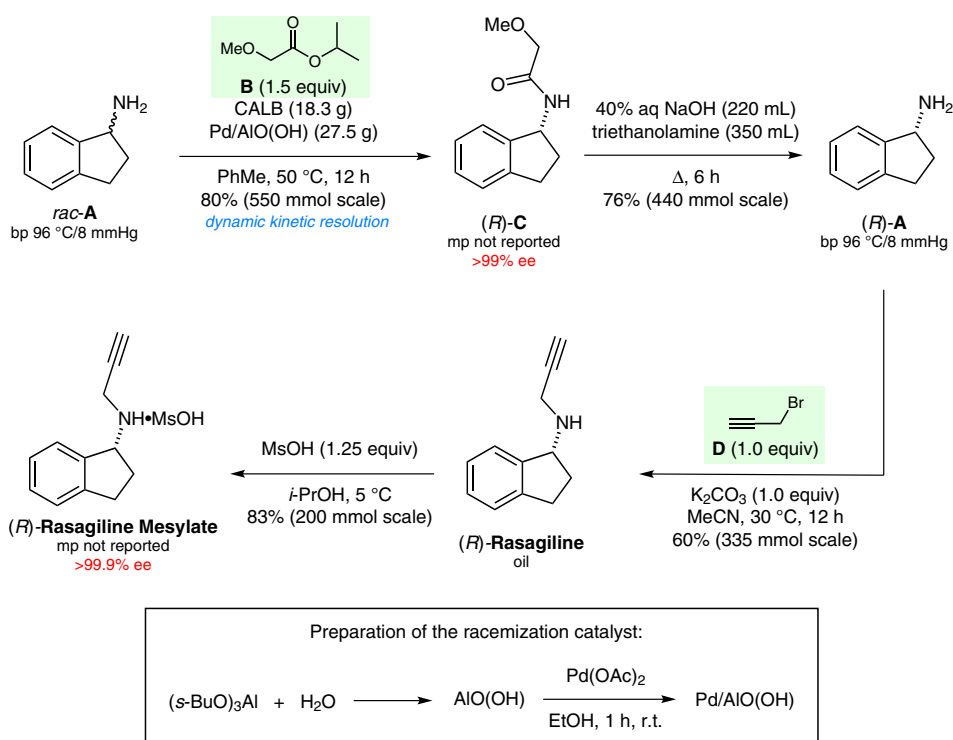
racemization

*Candida antarctica* lipase B

hydrogen borrowing

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Novel Synthesis of Rasagiline via a Chemoenzymatic Dynamic Kinetic Resolution  
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## Synthesis of (*R*)-Rasagiline via Dynamic Kinetic Resolution



**Significance:** Rasagiline mesylate (Azilect®) is a selective monoamine oxidase B inhibitor that is administered as initial monotherapy in early Parkinson's disease and as adjunct therapy to levodopa in moderate-to-advanced disease. The key step in the synthesis depicted is the dynamic kinetic resolution of racemic 1-aminoindan **A** catalyzed by immobilized *Candida antarctica* lipase B (CALB) together with a palladium racemization catalyst – a process that could be conducted in a concentration of up to 200 g/L.

**Comment:** The palladium nanocatalyst Pd/AIO(OH) racemizes the amine via an imine intermediate (hydrogen borrowing). Racemization was complete in four hours using only 0.5 mol% of palladium in toluene at 70 °C. The catalyst was prepared as palladium nanoparticles entrapped in aluminum hydroxide according to the procedure of Y. Kim et al. (*Tetrahedron Lett.* **2010**, *51*, 5581). The chemoenzymatic catalyst system could be recycled 5–6 times.