A SHORT SEMISYNTHESIS OF HEDERAGONIC ACID BY C–H ACTIVATION

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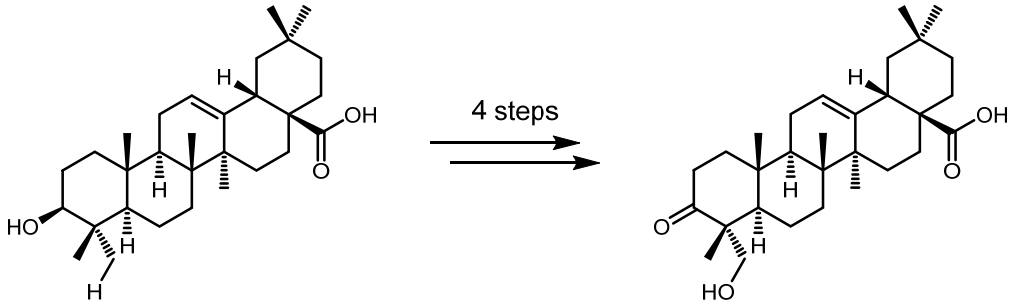
Polyhydroxylated oleananes are a vast family of naturally occurring triterpenoids with versatile biological activities.[1] A low commercial availability combined with high prices makes these molecules interesting targets in natural product synthesis. Oleanolic acid (1), a cheap commercially available material, is a practical starting point embodying the full carbon skeleton.



Oleanolic acid (1) **Hederagonic acid (2)**

In a prior approach, the preparation of (2) was achieved in no less than 9 steps from (1), using stoichiometric palladium(II) and toxic lead(IV) reagents.[2]

Herein we present a modified, concise route to hederagonic acid (2). Our approach features several multi-step one-pot reactions, allowing a minimisation of the number of steps and reducing the preparative effort. Importantly, we achieve catalytic C–H functionalization at unusually low temperatures.[3] Hederagonic acid (2) was thus prepared in as little as 4 steps, resulting in the shortest semisynthesis of this oleanane to date.

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[1] H. Sun, W.-S. Fang, W.-Z. Wang, C. Hu, Bot. Stud. 2006, 47, 339–368.

[2] X.-A. Wen, J. Liu, L.-Y. Zhang, P.-Z. Ni, H.-B. Sun, Chin. J. Nat. Med. 2010, 8, 441–448.

[3] S. R. Neufeldt, M. S. Sanford, Org. Lett. 2010, 12, 532–535.