

# Synthetic Approaches of Oleocanthal and Inohanalactone Natural Products †

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**Abstract:** The first part of this research study is synthetic approaches of a decarboxymethyl ligstroside aglycone, a natural product more commonly known as oleocanthal. More specifically, oleocanthal is a non-steroidal, anti-inflammatory compound found in Extra Virgin Olive Oil. It is of important synthetic interest as it has various natural and pharmacological properties, contributing to the improvement of health. The synthetic process was started from the commercially available 5,6-dihydropyran-2-one, from which the carbon skeleton of the desired product was formed by a 1,4-addition reaction. However, after three steps, the results were not as expected, so different synthetic paths were tested, from the same organic matter, without however achieving the composition of the final product. The second part concerns the natural product inohanalactone, which was recently isolated from a bacterium of the genus *Nocardia*, and the biological actions of the compound have not yet been clarified. The goal of this section was the synthesis of the enantiomer of inohanalactone, starting from the commercially available D-ribose. As far as the theoretical part of the research content is concerned, some general information for each compound is mentioned. Furthermore, for oleocanthal, its biological role and pharmacological properties are also described. Then reference is made about its action against various diseases as well as previous bibliographic synthetic approaches. Subsequently, the experimental part develops and analyzes in detail the synthetic procedures followed and how to deal with the problems that arose.

**Keywords:** natural products; oleocanthal; inohanalactone; organic synthesis; protection-deprotection; Wittig reaction; transesterification; dihydroxylation; epoxidation.

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## Conflicts of Interest

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