# GLUCURONIDATION OF DIOSGENIN: THE STRATEGY FOR ENHANCING ANTIMICROBIAL ACTIVITY

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Diosgenin, a steroidal sapogenin recognized as a natural precursor to numerous pharmacologically significant compounds [1-3], continues to reveal its potential. *In vivo*, it undergoes metabolic transformations, including glucuronidation.
This study presents the synthesis and structural characterization of diosgenyl glucuronides, covering both the α and β anomers (Fig.). While the β anomer is a naturally occurring metabolite, the α anomer has not yet been synthesized or isolated. Through a precisely designed synthetic strategy, both anomers were obtained, and their structures were confirmed using X-ray crystallography.
Subsequent investigations were aimed to enhance the biological properties of the synthesized compounds. To achieve this, the carboxyl group was modified through conjugation with L- and D-alanine. The obtained derivatives were subjected to microbiological assays, which demonstrated diverse antimicrobial activity. Moreover, selected compounds were subjected to an in-depth evaluation of their effects on *Staphylococcus aureus* biofilm, a structure that represents a significant challenge in contemporary medicine. Notably, certain derivatives exhibited biofilm-disrupting activity, which is rare among structurally related compounds.
The research findings indicate a potential correlation between molecular structure and biological activity, offering valuable insights for further exploration of steroidal glucuronides as prospective antimicrobial agents.

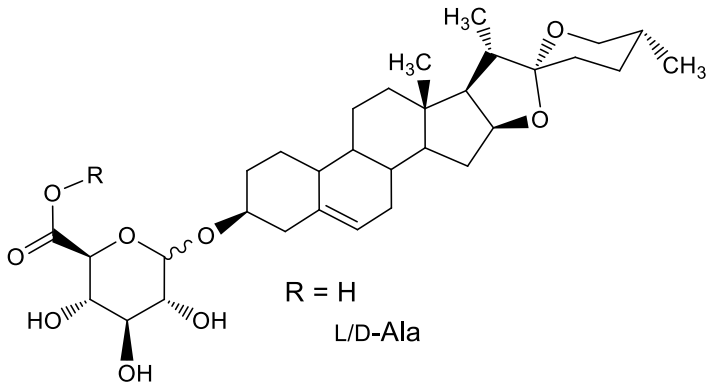


**Figure 1**. Chemical structure of diosgenyl glucuronides and their derivatives.

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