S-GALACTOSIDE INHIBITORS OF GALECTIN-1 AND -3: FROM MOLECULAR DESIGN TO HIGHLY SELECTIVE NANOMOLAR INHIBITORS

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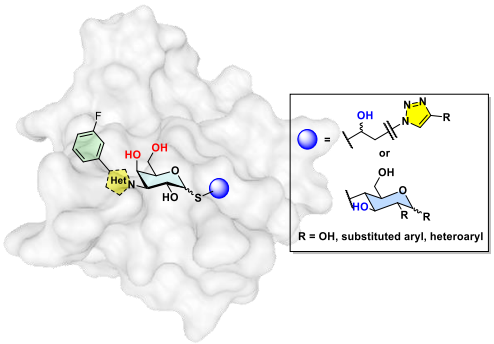
Galectins-1 and -3 play crucial roles in cell adhesion, apoptosis, and immune responses, with their regulation linked to cancer progression. This makes them attractive therapeutic targets.[1] In our laboratory, we have developed *S*-galactoside inhibitors of galectin-1 and -3 with high selectivity and affinity. Through structural optimization, we successfully designed nanomolar selective inhibitors of galectin-3, exhibiting remarkable specificity. Their development involved the synthesis and modification of *S*-galactoside derivatives, detailed biochemical characterization, and biological evaluation.

This presentation focuses on new methods and strategies for the chemical synthesis of these *S*-galactosides, discussing novel glycosylation reactions and stereoselectivity control.[2-3] The effectiveness of these methods will be illustrated by the synthesis of relevant galectin inhibitors. Our findings enhance the understanding of structural and functional requirements for selective galectin inhibition[4] and open new possibilities for developing carbohydrate-binding protein inhibitors with therapeutic potential.



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