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# MODIFICATIONS OF C-3 AND ANTIBACTERIAL ACTIVITY OF 6*β*-HYDROXYBETUNOLIC ACID

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Antibiotic resistance crisis has become one of the major public health problems all over the world. Hence, there is an urgent need to find new antibiotics to combat these resistant organisms. Plants and their secondary metabolites have promising bioactivity, which could be effectively used in drug discovery. 6*β*-Hydroxybetunolic acid is one such secondary metabolite (lupeol type triterpenoid) isolated from the bark of *Schumacheria castaneifolia*, a plant endemic to Sri Lanka, and is reported to possess antibacterial activity against *Staphylococcus aureus.* The objective of this study was to evaluate the antibacterial activity of structural derivatives of 6*β*-hydroxybetunolic acid against selected bacterial strains. Four structural derivatives of 6*β*-hydroxybetunolic acid were synthesized by modifying the carbonyl group at C-3 to obtain cyclic ketal, secondary alcohol, acetylated alcohol and oxime and their chemical structures were confirmed through the spectroscopic data. Antibacterial activity of these was tested against six strains of Gram-positive organisms (*S. aureus* ATCC 29213, *Enterococcus faecalis* ATCC 29212 and four stains of clinically isolated methicillin resistant *S. aureus*) and eight strains of Gram-negative organisms (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853*,* carbapenem-sensitive and carbapenem-resistant *Kebsiella pneumonia* ATCC BAA 1705 and 1706) and four stains of clinically isolated *Acinetobacter* sp., utilizing broth microdilution assay in 96 well plates according to Clinical and Laboratory Standards Institute recommendations. Results revealed that 6*β*-hydroxybetunolic acid and its derivatives showed antibacterial activity against Gram-positive organisms (MIC 8 - 512 mg $L^{-1}$) while no activity was observed against the Gram-negative organisms (MIC > 1,024 mg $L^{-1}$). Hence, it is concluded that the presence of carbonyl group at C-3 is important for the antibacterial activity 6*β*-hydroxybetunolic acid against Gram-positive organisms.

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