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Anti-methicillin resistant *Staphylococcus aureus* (MRSA) flavonoids from *Populus balsamifera* buds and preliminary determination of structure-activity relationships

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North America Aborigines applied preparation of buds from *Populus balsamifera* on frost-bitten members, sores and inflamed wounds. Our group has undertaken a phytochemical investigation of buds from *P. balsamifera* after an ethnaolic extract showed a strong antibacterial activity against *S. aureus*. The investigation led to the isolation of a unique series of 22 antibacterial flavonoids, named balsacones, which are dihydrochalcone or flavan core substituted by up to four hydroxycinnamyl chains. Flavan core balsacones were isolated as racemic mixtures and some of them were purified using chiral chromatography. The absolute configuration of isolated enantiomers was determined using X-ray diffraction analyses and electronic circular dichroism (ECD) data. Racemic mixtures of balsacones were evaluated for their antibacterial activity against clinical isolates of methicillin resistant *Staphylococcus aureus* (MRSA). Several of the tested balsacones were potent anti-MRSA agents showing MIC values in the low micromolar range. Structure-activity relationships study highlighted some important parameters involved in the antibacterial activity of balsacones such as the presence of a cinnamyl chain at position C-3 and a cinnamoyl chain at position C-8 of the flavan skeleton. These results suggest that balsacones could represent a potential novel class of naturally occurring anti-MRSA agents.

Biography

François Simard has completed his PhD from Université du Québec à Chicoutimi at laboratoire d'analyse et de séparation des essences végétales (LASEVE) working on the isolation and characterization of natural products from the boreal forest of Canada. His work has led to the publication of 6 journal articles and 1 book chapter. He is pursuing Postdoctoral studies at Université du Québec à Chicoutimi.

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