

## Natalenamides A<sup>1</sup>C, Cyclic Tripeptides from the Termite-Associated Actinomadura sp. RB99.

Lee SR, Lee D, Yu JS, Benndorf R, Lee S, Lee DS, Huh J, de Beer ZW, Kim YH, Beemelmans C, Kang KS, Kim KH (2018) Natalenamides A<sup>1</sup>C, Cyclic Tripeptides from the Termite-Associated Actinomadura sp. RB99. *Molecules* 23(11), [PubMed](#)

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### Projects

Investigation of secondary metabolites from insect-associated microbes and their contribution to insect homeostasis and defense

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### Abstract

In recent years, investigations into the biochemistry of insect-associated bacteria have increased. When combined with analytical dereplication processes, these studies provide a powerful strategy to identify structurally and/or biologically novel compounds. Non-ribosomally synthesized cyclic peptides have a broad bioactivity spectrum with high medicinal potential. Here, we report the discovery of three new cyclic tripeptides: natalenamides A<sup>1</sup>C (compounds 1<sup>1</sup>–3). These compounds were identified from the culture broth of the fungus-growing termite-associated Actinomadura sp. RB99 using a liquid chromatography (LC)/ultraviolet (UV)/mass spectrometry (MS)-based dereplication method. Chemical structures of the new compounds (1<sup>1</sup>–3) were established by analysis of comprehensive spectroscopic methods, including one-dimensional (<sup>1</sup>H and <sup>13</sup>C) and two-dimensional (<sup>1</sup>H-<sup>1</sup>H-COSY, HSQC, HMBC) nuclear magnetic resonance spectroscopy (NMR), together with high-resolution electrospray ionization mass spectrometry (HR-ESIMS) data. The absolute configurations of the new compounds were elucidated using Marfey's analysis. Through several bioactivity tests for the tripeptides, we found that compound 3 exhibited significant inhibitory effects on 3-isobutyl-1-methylxanthine (IBMX)-induced melanin production. The effect of compound 3 was similar to that of kojic acid, a compound extensively used as a cosmetic material with a skin-whitening effect.

### Identifier

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