



# Callyaerins A-F and H, new cytotoxic cyclic peptides from the Indonesian marine sponge *Callyspongia aerizusa*

Sabrin RM Ibrahim, Cho C. Mina, Franka Teuschera, Rainer Ebel, Christel Kakoschke, Wenhan Lin, Victor Wray, RuAngelie Edrada-Ebel, Peter Proksch.

## Abstract:

Bioassay guided fractionation of the EtOAc fraction of the sponge *Callyspongia aerizusa* yielded seven new cytotoxic cyclic peptides callyaerins A-F (1-6) and H (8). Their structures were determined using extensive 1D (<sup>1</sup>H, <sup>13</sup>C and DEPT) and 2D (COSY, HMQC, HMBC, TOCSY, and ROESY) NMR and mass spectral (ESI and HRESI-TOF) data. All compounds were cyclic peptides containing ring systems of 5-9 amino acids and side chains of 2-5 amino acids in length. An unusual (Z)-2,3-diaminoacrylic acid unit provided the template for ring closure and afforded the linkage to the peptidic side chain which was always initiated with a proline moiety. All peptides contained three or more proline residues and the remaining residues were predominantly hydrophobic residues with all amino acids present in the L form. Callyaerins A-F (1-6) and H (8) showed biological activity in antibacterial assays and in various cytotoxicity assays employing different tumour cell-lines (L5178Y, HeLa, and PC12). Callyaerins E (5) and H (8) exhibited strong activity against the L5178Y cell line with ED50 values of 0.39 and 0.48 μM, respectively. On the other hand, callyaerin A (1) showed strong inhibitory properties towards *C. albicans*

## Keywords:

*Callyspongia aerizusa* Callyaerins Proline-rich cyclic peptides Cytotoxicity Antibacterial Antifungal

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