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海綿 *Discodermia calyx* 由来メタゲノムライブラリからの抗菌活性化合物の単離

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【目的】Metagenomics is a promising approach to explore uncultured environmental microorganisms by extracting genomic DNA directly from samples without any culture or isolation steps. Marine sponges, a rich and important source for bioactive compounds, house vast amounts of symbiotic bacteria in their tissues. However, the majority (>99%) of them are uncultured with standard culture methods now. We therefore attempted to isolate antibacterial compounds from heterologous expression of the metagenomic library of the marine sponge *Discodermia calyx*.

【方法・結果】The metagenomic DNA was extracted from the marine sponge *D. calyx* collected off Shikine-jima island, Japan. Employment of the CopyControl Fosmid Library Production Kit afforded the metagenomic library (2.5 x 10^5 cfu) having ~40 kbp insert DNA. The two-layer top agar diffusion method with *Bacillus cereus* was used for the screening of the antibacterial activity of fosmid clones. The large-scale broth of an active clone was fractionated by Diaion HP20 resin, ODS flash column chromatography, Sephadex LH-20 column chromatography and ODS HPLC to afford active compounds. The structures of compounds were determined by NMR, ESI TOF MS and UV spectrum data. We have already detected four different active clones and one of them afforded three indole-related compounds including novel compound **2**. These results suggested that the metagenomic library from *D. calyx* would be promising source of antibacterial compounds and the active compounds isolated from other clones will be also reported.