AIMS Microbiology, 11(1): 182–205.
DOI: 10.3934/microbiol.2025010
Received: 22 November 2024
Revised: 19 February 2025
Accepted: 26 February 2025
Published: 03 March 2025

https://www.aimspress.com/journal/microbiology

Research article

Microbiome profiling and Actinomycetes isolation from tropical marine sponges

Trinset Weeraphan[1], Chollabuppha Chou[1], Naphatson Chanthathamrongsiri[2,3], Thanchanok Sirirak[2,3], Sumaitt Putchakarn[4], Supakarn Chamni[5,6] and Wongsakorn Phongsopitanun[1,6,*]

[1] Department of Biochemistry and Microbiology, Chulalongkorn University, Pathum Wan, Bangkok, 10330, Thailand
[2] Faculty of Pharmaceutical Sciences, Burapha University, Chonburi, 20131, Thailand
[3] The Research Unit in Synthetic Compounds and Synthetic Analogues from Natural Product for Drug Discovery (RSND), Burapha University, Chonburi, 20131, Thailand
[4] Institute of Marine Science, Burapha University, 20131, Thailand
[5] Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, 10330, Thailand
[6] Center of Excellence in Natural Products and Nanoparticles, Chulalongkorn University, Bangkok, Thailand

* **Correspondence:** Email: wongsakorn.p@chula.ac.th.

Supplementary

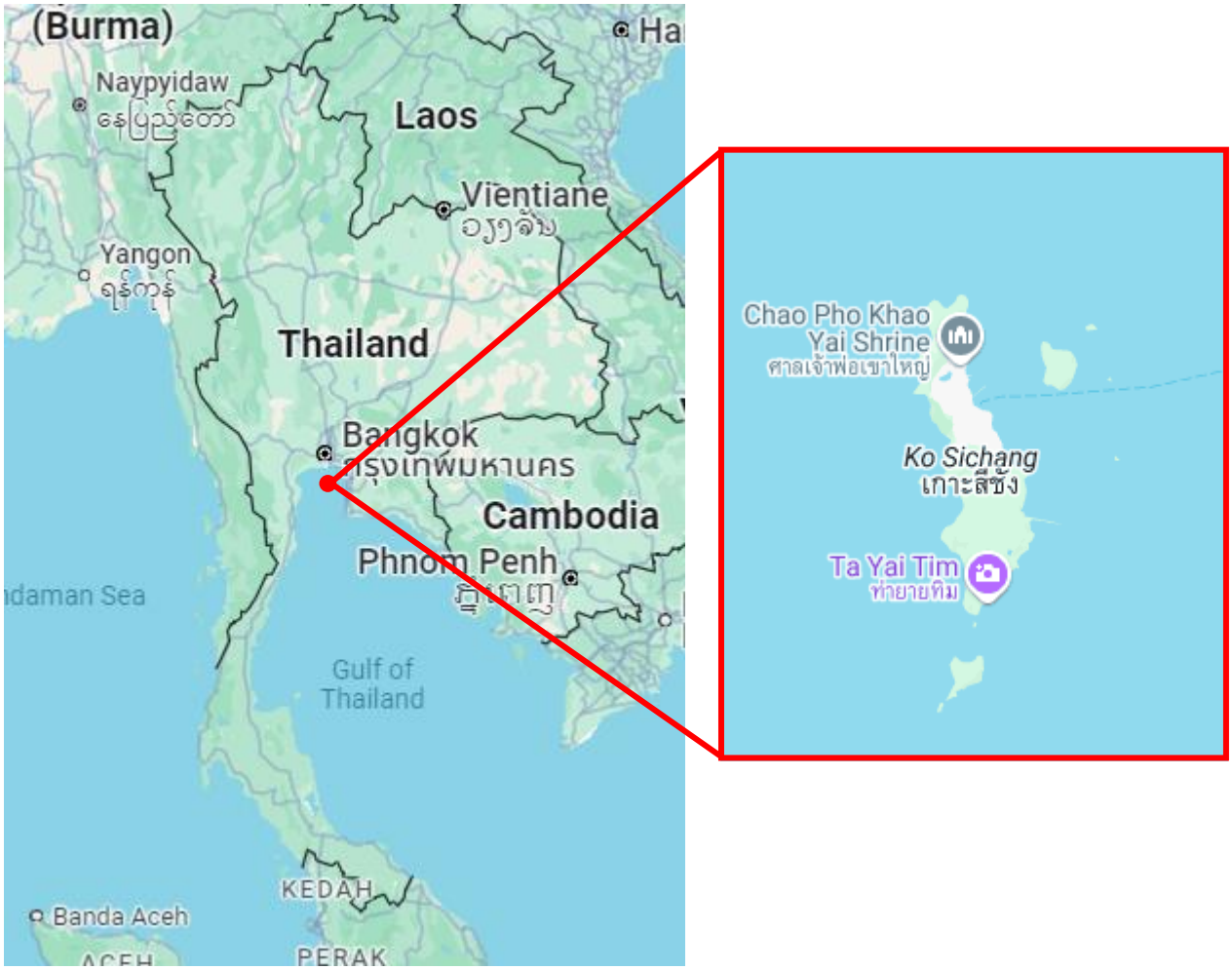

Figure S1. Sampling site location (Sichang Island, Gulf of Thailand: 13°08'59.5"N, 100°48'34.5"E).

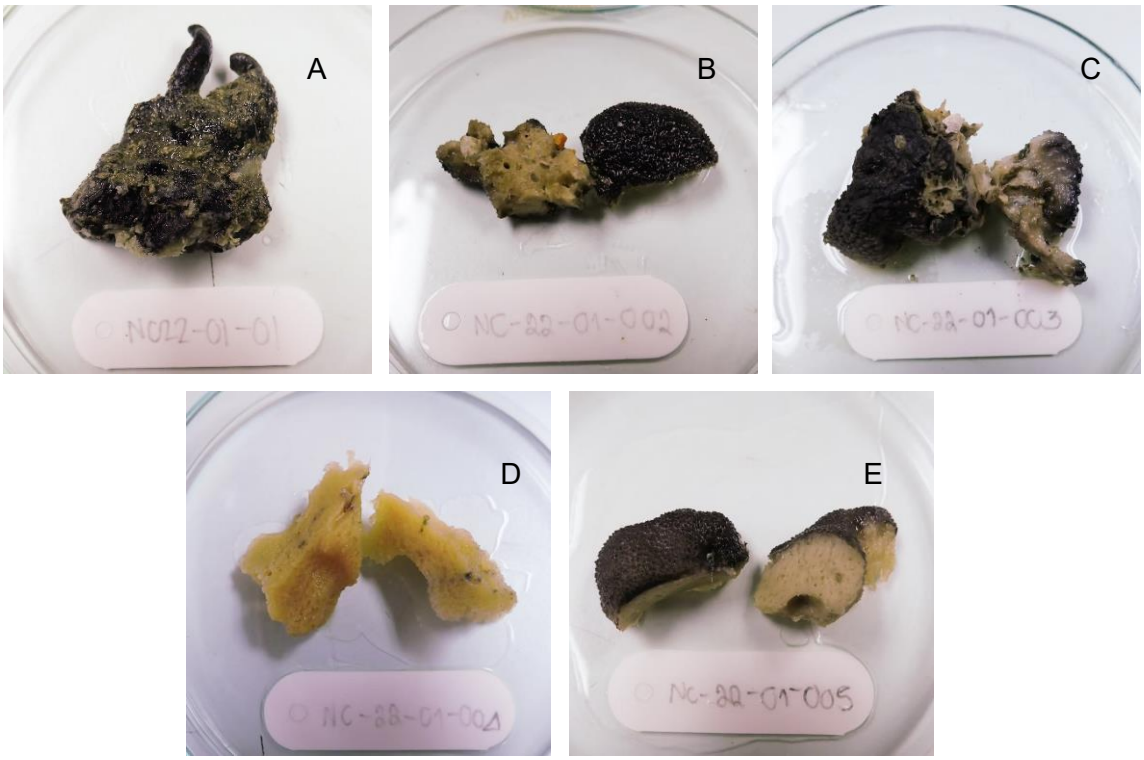

Figure S2. Photo of sponge sample used in this study. (A) *Penares nux* (de Laubenfels, 1954) (PF01), (B) *Cacospongia* sp. (PF02), (C) *Ircinia mutans* (Wilson, 1925) (PF03), (D) *Gelliodes petrosioides* (Dendy, 1905) (PF04), (E) *Cacospongia* sp. (PF05).

Table S1. Actinobacteria isolated from sponge samples using cultural dependent method.

Sponge sample	Actinobacterial Isolate no.	The closest type strains (Valid name)	Accession number of 16S sequence	Similarity (%)	Length (bp)
PF1 (*Penares nux* (de Laubenfels, 1954))	PF1-02	*Streptomyces iranensis* HM 35^T	PQ361752	99.44	1,465
	PF1-03	*Micromonospora humi* DSM 45647^T	PQ361753	99.86	1,450
	PF1-04	*Micromonospora endophytica* 202201^T	PQ361754	99.78	1,369
PF2 (*Cacospongia* sp.)	PF2-02	*Micromonospora krabiensis* DSM 45344^T	PQ361755	100	1,445
	PF2-03	*Micromonospora wenchangensis* CCTCC AA 2012002^T	PQ361756	100	1,459
	PF2-04	*Micromonospora fluminis* A38^T	PQ361757	100	1,453
	PF2-06	*Micromonospora haikouensis* 232617^T	PQ361758	100	1,458
	PF2-07	*Micromonospora fluminis* A38^T	PQ361759	99.62	1,306
	PF2-08	*Micromonospora maritima* D10-9-5^T	PQ361760	100	1,360
	PF2-09	*Micromonospora maritima* D10-9-5^T	PQ361761	99.85	1,355
	PF2-10	*Micromonospora aurantiaca* ATCC 27029^T	PQ361762	100	1,365
	PF2-11	*Micromonospora craniellae* LHW63014^T	PQ361763	99.64	1,381
	PF2-12	*Micromonospora schwarzwaldensis* HKI0641^T	PQ361764	99.42	1,369
	PF2-13	*Micromonospora aurantiaca* ATCC 27029^T	PQ361765	100	1,337
	PF2-15	*Micromonospora endophytica* 202201^T	PQ361766	99.78	1,367
	PF2-16	*Micromonospora coxensis* DSM 45161^T	PQ361767	99.41	1,356
	PF2-19	*Micromonospora chalcea* DSM 43026^T	PQ361768	99.78	1,347
	PF2-20	*Micromonospora chalcea* DSM 43026^T	PQ361769	99.78	1,357

Continued on next page

Isolation sample	Isolated	The closest type strains (Valid name)	Accession number of 16S sequence	Similarity (%)	Length (bp)
PF3 (*Ircinia mutans* (Wilson, 1925))	PF3-01	*Streptomyces olivaceus* NRRL B-3009^T	PQ361770	99.91	1,146
	PF3-02	*Micromonospora fluminis* A38^T	PQ361771	100	1,374
	PF3-03	*Micromonospora fluminis* A38^T	PQ361772	100	1,321
	PF3-05	*Micromonospora maritima* D10-9-5^T	PQ361773	100	1,348
	PF3-06	*Micromonospora radicis*AZ1-13^T	PQ361774	99.05	1,054
	PF3-07	*Micromonospora maritima* D10-9-5^T	PQ361775	99.82	1,084
	PF3-08	*Micromonospora fluminis* A38^T	PQ361776	100	1,346
	PF3-10	*Micromonospora fluminis* A38^T	PQ361777	99.92	1,284
	PF3-13	*Micromonospora fluminis* A38^T	PQ361778	100	1,343
	PF3-14	*Micromonospora maritima* D10-9-5^T	PQ361779	100	1,341
	PF3-15	*Micromonospora taraxaci* DSM 45885^T	PQ361780	99.57	1,393
	PF3-16	*Micromonospora schwarzwaldensis* HKI0641^T	PQ361781	99.92	1,321
	PF3-17	*Micromonospora chokoriensis* DSM 45160^T	PQ361782	100	1,347
	PF3-18	*Micromonospora oryzae* CP2R9-1^T	PQ361783	100	1,420
	PF3-20	*Micromonospora taraxaci* DSM 45885^T	PQ361784	99.57	1,397
	PF3-22	*Streptomyces iranensis* HM 35^T	PQ361785	99.56	1,356
	PF3-23	*Micromonospora fluminis* A38^T	PQ361786	100	1,355
	PF3-24	*Micromonospora fluminis* A38^T	PQ361787	100	1,352
	PF3-25	*Micromonospora fluminis* A38^T	PQ361788	100	1,290

Continued on next page

Isolation sample	Isolated	The closest type strains (Valid name)	Accession number of 16S sequence	Similarity (%)	Length (bp)
PF4 (*Gelliodes petrosioides* Dendy, 1905)	PF4-01	*Micromonospora schwarzwaldensis* HKI0641^{T}	PQ361789	99.4	1,344
	PF4-02	*Micromonospora endophytica* 202201^{T}	PQ361790	99.78	1,353
	PF4-03	*Micromonospora carbonacea* DSM 43168^{T}	PQ361791	99.85	1,348
	PF4-04	*Micromonospora fluminis* A38^{T}	PQ361792	100	1,356
	PF4-05	*Micromonospora wenchangensis* CCTCC AA 2012002^{T}	PQ361793	100	1,132
PF5 (*Cacospongia* sp.)	PF5-01	*Micromonospora haikouensis* 232617^{T}	PQ361794	100	1,329
	PF5-03	*Micromonospora oryzae* CP2R9-1^{T}	PQ361795	99.85	1,352
	PF5-05	*Micromonospora schwarzwaldensis* HKI0641^{T}	PQ361796	99.4	1,340
	PF5-06	*Micromonospora wenchangensis* CCTCC AA 2012002^{T}	PQ361797	99.48	1,347
	PF5-08	*Micromonospora maritima* D10-9-5^{T}	PQ361798	100	1,237
	PF5-09	*Micromonospora schwarzwaldensis* HKI0641^{T}	PQ361799	99.4	1,328

AIMS Press