Isolasi dan identifikasi mikroba pada habitat ekstrim di sulawesi selatan

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Introduction

Extremophiles: Bacteria and microalgae

Hot Spring and Salt Pond

Industrial and Biotechnological Applications (*Thermus aquaticus, Dunaliella salina, Spirulina* sp.)

Aims : to isolate and characterize extremophiles (bacteria and microalgae) from hot springs and salt ponds

Materials and Methods

Location and Sampling	Isolation	Characterization
• Waepella Hot Spring Sinjai and Salt Pond Jeneponto • Water samples • Water quality measurements (suhu, salinitas, pH)	• Microalgae : enrichment and agar plating techniques (f/2 medium) • Bacteria : agar plating technique (TSA medium)	• Morphology • Gram staining • Catalase • Endospora

Results and Discussion

Tabel 1. Data hasil pengukuran parameter kualitas air pada lokasi penelitian

Parameter kualitas air	Tambak Garam di Jeneponto			Sumber Air Panas di Sinjai		
	Saluran utama	Saluran ke tambak garam	Tambak garam	Station 1 (sumber)	Station 2 (bagian tengah)	Station 3 (bagian luar)
Suhu (°C)	32	34	40	55	53	49
Salinitas (ppt)	40	68	>100	0	0	0
pH	8,01	7,96	7,76	7.43	7,61	7,28
Warna perairan	Kehijauan	Coklat keemasan	Coklat keemasan	jernih	jernih	jernih

Tabel 2. Hasil Pengamatan fenotif, uji pewarnaan gram,katalase dan endospora isolat bakteri yang ditemukan pada Waepella Hot Spring Sinjai

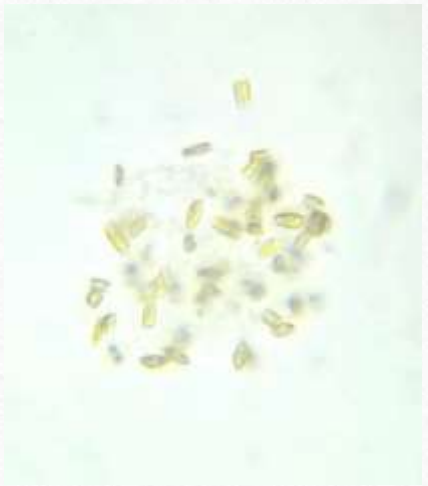
No.	Isolate Code	Colony colour	Gram Staining	Cell shapes	Katalase	Endospore	Source of Isolate
1.	IND-UNM SA.49.1.1	White	positive	Rod	-	+	Hot spring at sta. 3.
2.	IND-UNM SA.49.2.1	White	negative	Rod	-	-	Hot spring at sta. 3.
3.	IND-UNM SA.49.1.2	White	negative	Cocci	+	+	Hot spring at sta. 3.
4.	IND-UNM SA.49.2.2	White	positive	Cocci	+	-	Hot spring at sta. 3.
5.	IND-UNM ST.53.1	White	negative	Cocci	+	-	Hot spring at sta. 2.
6.	IND-UNM ST.53.2	White	negative	Cocci	+	-	Hot spring at sta. 2.
7.	IND-UNM ST.53.3	White	negative	Rod	+	-	Hot spring at sta. 2.
8.	IND-UNM ST.53.4	Yellow	negative	Cocci	+	-	Hot spring at sta. 2.
9.	IND-UNM SS.55.1.1	White	Negative	Cocci	+	-	Hot spring at sta. 1.
10.	IND-UNM SS.55.2.1	White	positive	Cocci	+	+	Hot spring at sta. 1.
11.	IND-UNM SS.55.1.1	White	Negative	Rod	-	-	Hot spring at sta. 1.
12.	IND-UNM SS.55.2.2	White	negative	Rod	+	-	Hot spring at sta. 1.
13.	IND-UNM ST 53 P1	White	Negative	Cocci	+	-	Hot spring at sta. 2.
14.	IND-UNM ST 53 P2	White	Negative	Cocci	+	+	Hot spring at sta. 2.

Tabel 3. Hasil Pengamatan fenotif dan uji pewarnaan gram isolat bakteri yang ditemukan pada Tambak Garam Jeneponto

No.	Isolate Code	Colony colour	Gram Staining	Cell shapes	Source of Isolate
1.	IND-UNM TG.4.2	white	negative	Cocci	Salt pond sta.1
2.	IND-UNM TG.4.3	white	Negative	Cocci	Salt pond sta.2
3.	IND-UNM TG.4.4	white	negative	Cocci	Salt pond sta.1
4.	IND-UNM TG.7.2	white	negative	Rod	Salt pond sta.4
5.	IND-UNM TG.12.1	White	Negative	Rod	Salt pond sta.3
6.	IND-UNM TG.12.2	White	negative	Rod	Salt pond sta.4
7.	IND-UNM TG.12.3	Brown	negative	Cocci	Salt pond sta.3
8.	IND-UNM TG.12.4	Brown	positive	Cocci	Salt pond sta.4
9.	IND-UNM TG.17.1	Brown	negative	Cocci	Salt pond sta.3
10.	IND-UNM TG 17.2	Brown	positive	Rod	Salt pond sta.3
11.	IND-UNM TG 17.3	White	positive	Rod	Salt pond sta.4
12.	IND-UNM TG 17.4	White	positive	Cocci	Salt pond sta.4

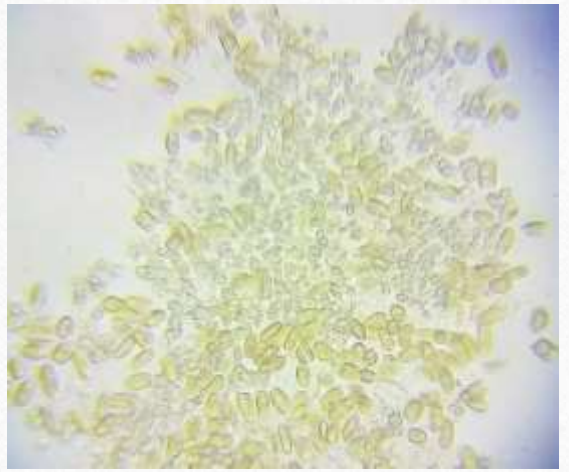
Gambar 2. Kultur Murni mikroalga dari hot spring Sinjai dan Tambak Garam Jeneponto

Tambak Garam 12% NaCl
(Chlorophyceae)



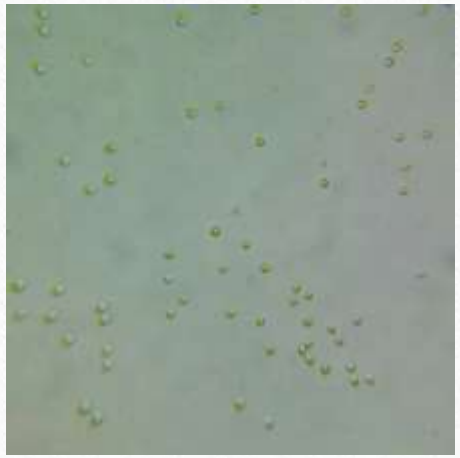
Tambak Garam 8% NaCl
(Bacillariophyceae)

Tambak Garam 4% NaCl
(Bacillariophyceae)

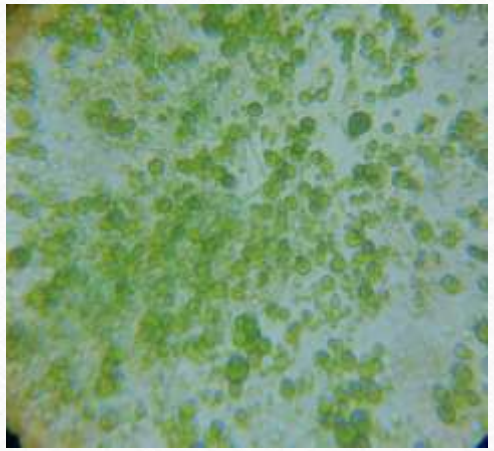


Tambak Garam 4% NaCl
(Bacillariophyceae)

Gambar 3. Isolate mikroalga pada hot spring Sinjai dan Tambak Garam Jeneponto (Light microscope 40x10 magnification)



Hot spring Sinjai 0% NaCl
(Cyanophyceae)



Hot Spring Sinjai 0% NaCl
(Chlorophyceae)

Conclusion

- Diperoleh 14 isolate bakteri yang diisolasi dari Waepella Hot Spring Sinjai dan 12 isolate dari tambak garam sinjai
- Diperoleh 6 isolate mikroalga yang terdiri dari 3 kelas yakni Bacillariophyceae (3 isolates), cyanophyceae (1 isolate) dan Chlorophyceae (2 isolates)
- Isolate yang diperoleh akan diteliti lebih lanjut dan dikembangkan untuk berbagai aplikasi industry

Sekian & Terima Kasih

Waepella hot spring Sinjai

Tambak Garam Jeneponto