

## ESM Medium

(Okaichi et al. 1982)

This is a modified Schreiber's Medium and Erd-Schreiber's Medium (Schreiber 1927, Hämmerling 1931, Føyn 1934) that has Tris buffer, iron EDTA, Mn-EDTA and vitamins added. To prepare the soil extract, see Provasoli et al. (1957) or Tompkins et al. (1995). **To Prepare**, begin with 900 mL of filtered natural seawater, add the soil extract, dissolve the Tris buffer, and add 1 mL of each stock solution. Pasteurize or Tyndallize. Final pH should be 8.0.

Component	Stock Solution	Quantity	Conc. L <sup>-1</sup> Final Medium
soil extract	---	50 mL	---
TRIS base	---	1 g	8.26 x 10 <sup>-3</sup> M
NaNO <sub>3</sub>	120.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	1.41 x 10 <sup>-3</sup> M
K <sub>2</sub> HPO <sub>4</sub>	5.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	2.87 x 10 <sup>-5</sup> M
Fe-Na-EDTA • 3H <sub>2</sub> O	25.9 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	6.15 x 10 <sup>-8</sup> M
Mn-EDTA • 3H <sub>2</sub> O	33.2 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	7.49 x 10 <sup>-8</sup> M
vitamins stock solution	(see recipe below)	1 mL	---

### Vitamins Stock Solution

Into 900 mL of dH<sub>2</sub>O, dissolve the thymine and add 1 mL of the two primary stock solutions. Bring final volume to 1 liter with dH<sub>2</sub>O and filter sterilize. Store frozen in small volumes (e.g., 1 mL Eppendorf tubes).

Component	1° Stock Soln.	Quantity	Conc. L <sup>-1</sup> Final Medium
thymine	100.0 mg L <sup>-1</sup> dH <sub>2</sub> O	100 mg	7.93 x 10 <sup>-7</sup> M
biotin (vit. H)	1.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	4.09 x 10 <sup>-9</sup> M
cyanocobalamin (vit. B <sub>12</sub> )	1.0 g L <sup>-1</sup> dH <sub>2</sub> O	1 mL	7.38 x 10 <sup>-10</sup> M

## References

- Føyn, B. 1934. Lebenszyklus, Cytologie und Sexualität der Chlorophyceen *Cladophora suhrana* Kützing. *Arch. Protistenk.* **83**: 1-56.
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