

Culture conditions: Cultures were maintained at 25 °C under a 12 h light / 12 h dark photoperiod. Illumination was provided by cool-white LED grow lights at an intensity of 6000 lx. Cultures were grown in 150 mL glass Erlenmeyer flasks with an inoculation volume of 100 mL. Prior to inoculation, both the culture vessels and the medium were autoclaved at 121 °C and 0.1 MPa for 20 min. The cultures were maintained under static conditions with gentle manual agitation once daily, and all flasks were kept at the same distance from the light source.

Main reagents and chemicals:

All reagents used in this study were of analytical grade and purchased from Sinopharm Chemical Reagent Co., Ltd. (Shanghai, China). The reagents and their CAS registry numbers are listed below

Reagent	CAS No.
Zinc sulfate heptahydrate ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$)	7446-20-0
Manganese chloride tetrahydrate ($\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$)	13446-34-9
Cobalt nitrate hexahydrate ($\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$)	10026-22-9
Molybdenum trioxide (MoO_3)	1313-27-5
Copper sulfate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)	7758-99-8
Boric acid (H_3BO_3)	10043-35-3
Iron(II) sulfate heptahydrate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$)	7782-63-0
Ethylenediaminetetraacetic acid (EDTA)	60-00-4
Potassium hydroxide (KOH)	1310-58-3
Sodium chloride (NaCl)	7647-14-5
Potassium dihydrogen phosphate (KH_2PO_4)	7778-77-0
Calcium chloride dihydrate ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$)	10035-04-8
Dipotassium hydrogen phosphate (K_2HPO_4)	7758-11-4
Magnesium sulfate heptahydrate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$)	10034-99-8
Sodium nitrate (NaNO_3)	7631-99-4

Composition of the 1000× stock solution of BBM (Bold's Basal Medium)x1000 (BBM):

Component	Weight	Component	Weight
$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	0.882g	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	0.157g
$\text{MnCl}_2 \cdot 7\text{H}_2\text{O}$	0.121g	$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$	0.498g
$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	0.049g	KH_2PO_4	17.5g
MoO	0.071g	$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	2.5g
H_3BO_3	1.142g	K_2HPO_4	7.5g
EDTA	5g	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	7.5g
KOH	3.1g	NaNO_3	25g
NaCl	2.5g		