

# Caisson Laboratories Plant Growth Regulators – Plant Tissue Culture Protocol

The importance of plant growth regulators in plant tissue culture is well documented. Caisson offers a broad range of plant growth regulators specifically tested for plant cell culture. Each product is biologically tested following the criteria established for powdered media. Each auxin is tested for enhancement of callus growth and/or root initiation *in vitro*. Each cytokinin is tested for stimulation of shoot production.

The plant growth regulator solutions are sterile filtered through a 0.2 µm filter unit into sterile bottles. Each lot of plant growth regulator solution is tested for sterility according to specifications established by U.S. Pharmacopeia, as well as biological testing in plant cell culture using criteria identical to those established for our plant tissue culture media.

*FOR LABORATORY USE, PLANT TISSUE CULTURE MEDIA PREPARATION AND PLANT RESEARCH PURPOSES ONLY. NOT FOR USE AS A PLANT GROWTH REGULATOR ON DEVELOPED PLANTS. NOT FOR DRUG OR HOUSEHOLD USES.*

## Preparation and Use

To prepare a 1 mg/ml stock solution: Add 100 mg of the plant growth regulator to a 100 ml flask or other glass container. Add 2-5 ml of solvent to dissolve the powder. Once completely dissolved, bring to volume with cell culture grade water (Catalog No. WAL01). Stirring the solution while adding water may be required to keep the material in solution. Store the stock solution as recommended in the tables. Add 1.0 ml of the stock solution to 1 liter of medium to obtain a final concentration of 1.0 mg/L of the plant growth regulator in the culture medium. (See Table below.)

**Volume of Stock Solution = (Desired Hormone Conc. X Medium Volume) / Stock Solution Conc.**

**Plant Cell Culture Tested Auxins** are generally used in plant cell culture at a concentration range of 0.01-10.0 mg/L. When added in appropriate concentrations, they may regulate cell elongation, tissue swelling, cell division, formation of adventitious roots, inhibition of adventitious and axillary shoot formation, callus initiation and growth, and induction of embryogenesis.

**Plant Cell Culture Tested Cytokinins** are generally used in plant cell culture at a concentration range of 0.1-10.0 mg/L. When added in appropriate concentrations, they may regulate cell division, stimulate axillary and adventitious shoot proliferation, regulate differentiation, inhibit root formation, activate RNA synthesis and stimulate protein and enzyme activity.

\*CA = coautoclavable with other media components. F = filter sterilize. CA/F = coautoclavable with other media components, however, some loss of activity may occur. This can be compensated for by increasing component concentration. Component may be filter sterilized.

Catalog No.	Product Name	Type	Mol. Wt.	Solvent	Diluent	Powder Storage	Liquid Storage	Sterilization	Working Conc. (mg/L)	Plant Effect
A036	(±)-cis,trans-Absciscic acid (ABA)	Plant hormone	264.3	EtOH/1N KOH	Water	-20°C	-20°C	CA/F	0.1-10.0	No growth, turns brown
C043	2-carboxyphenyl 3-phenylpropane 1,3-dione (CPD)	Auxin Inhibitor	268.26	Water	Water	2-8°C	-20°C	CA/F	0.1-10.0	Auxin inhibitor
D013	3,6-Dichloro-o-anisic acid (Dicamba)	Herbicide	221	EtOH/ Water	Water	2-8°C	-20°C	F	0.01-10.0	Callus
G001	Gibberellic acid (GA <sub>3</sub> )	Plant hormone	346.4	EtOH/ 1N KOH	Water	2-8°C	2-8°C	CA/F	0.01-5.0	Elongation of internodes
G026	Gibberellic Acid (A <sub>4</sub> + 7)	Plant hormone	332.4	EtOH/ 1N KOH	Water	2-8°C	2-8°C	F	0.01-5.0	Elongation of internodes
GAL01	Gibberellic acid Solution 1mg/mL	Plant hormone					2-8°C	CA	0.01-5.0	Elongation of internodes
G032	Glyphosate	Herbicide	169.07	1N KOH	Water	2-8°C	-20°C	F	50-80	No growth for several weeks, then growth
P007	Phloroglucinol	Other	126.1	EtOH	Water	15-30°C	2-8°C	CA/F	10-150	Shoot and leaf formation
P054	Paclobutrazol	Growth retardant	293.8	DMSO	Water	15-30°C	2-8°C	CA/F	0.1-10.0	Shortened internodes
T017	Thidiazuron	Cytokinin-like	220.2	DMSO/1N KOH	Water	2-8°C	-20°C	CA/F	0.1-10.0	Shoot and leaf proliferation , shortened internodes
TDL01	Thidiazuron Solution 1mg/mL	Cytokinin-like					-20°C	CA	0.1-10.0	Shoot and leaf proliferation , shortened internodes

Catalog No.	Product Name	Type	Mol. Wt.	Solvent	Diluent	Powder Storage	Liquid Storage	Sterilization	Working Conc. (mg/L)	Plant Effect
D001	2,4-Dichlorophenoxyacetic acid	Auxin	221	EtOH/1N KOH	Water	15-30°C	2-8°C	CA	0.01-6.0	Callus
DSL02	2,4-Dichlorophenoxyacetic acid 1mg/mL Solution	Auxin					2-8°C	CA	0.01-6.0	Callus
I001	Indole-3-acetic acid Free acid (IAA)	Auxin	175.2	EtOH/1N KOH	Water	-20°C	-20°C	CA/F	0.01-3.0	Roots and callus
ISL01	IAA Solution 1mg/mL	Auxin					-20°C	CA	0.01-3.0	Roots and callus
I002	Indole-3-butyric acid (IBA)	Auxin	203.2	EtOH/1N KOH	Water	2-8°C	-20°C	CA/F	0.1-10.0	Roots and callus
I008	Indole-3-butyric acid Potassium salt (IBA-K)	Auxin	241.3	Water	Water	2-8°C	-20°C	CA/F	0.1-10.0	Roots and callus
ISL02	IBA Solution 1mg/mL	Auxin					-20°C	CA	0.1-10.0	Roots and callus
I009	3-Indolepropionic Acid (IPA)	Auxin	189.21	1N KOH	Water	-20°C	-20°C	CA	0.1-10.0	Roots and callus
N001	Naphthaleneacetic acid Free acid (NAA)	Auxin	186.2	1N KOH	Water	15-30°C	2-8°C	CA	0.1-10.0	Callus
N010	Naphthaleneacetic acid Free acid (NAA)	Auxin	224.3	Water	Water	15-30°C	2-8°C	CA/F	0.1-10.0	Callus
NSL01	NAA Solution 1mg/mL	Auxin					2-8°C	CA	0.1-10.0	Callus
A025	Adenine Sulfate, Dihydrate	Cytokinin	404.4	Warm Water	Warm Water	15-30°C	2-8°C	CA	50-250	thickened shoots with leaves
B001	6-Benzylaminopurine (BAP)	Cytokinin	225.3	1N KOH	Water	15-30°C	2-8°C	CA/F	0.1-5.0	Shoot and leaf proliferation
BSL01	BAP Solution 1mg/mL	Cytokinin					2-8°C	CA	0.1-5.0	Shoot and leaf proliferation
D006	6-(γ,γ-Dimethylallylamino)purine (2iP)	Cytokinin	203.2	1N KOH	Water	-20°C	-20°C	CA/F	1.0-30.0	Shoot and leaf proliferation
DSL01	2iP Solution 1mg/mL	Cytokinin					-20°C	CA	1.0-30.0	Shoot and leaf proliferation
K001	Kinetin	Cytokinin	215.2	1N KOH	Water	-20°C	-20°C	CA/F	0.1-5.0	Shoot and leaf proliferation
KSL01	Kinetin Solution 1mg/mL	Cytokinin					-20°C	CA	0.1-5.0	Shoot and leaf proliferation
T039	Meta-Topolin	Cytokinin	241.25	1N KOH	Water	-20°C	-20°C	CA/F	0.1-10.0	Shoot and leaf proliferation
Z007	trans-Zeatin	Cytokinin	219.2	1N KOH	Water	-20°C	-20°C	CA/F	0.01-5.0	Shoot and leaf proliferation
Z008	trans-Zeatin Riboside	Cytokinin	351.4	1N KOH	Water	-20°C	-20°C	F	0.01-5.0	Shoot and leaf proliferation
ZSL01	trans-Zeatin Solution 1mg/mL	Cytokinin					-20°C	CA	0.01-5.0	Shoot and leaf proliferation