

Product Name:	4-CPPU
Product Number:	C211
CAS Number:	68157-60-8
Molecular Formula:	$C_{12}H_{10}ClN_3O$
Molecular Weight:	247.68
Form:	Powder
Appearance:	White crystalline powder
Solubility:	Soluble in ethanol and methanol.
Melting Point:	170 – 172°C
Description:	<p>4-CPPU (CPPU) is a highly active plant growth regulator of the cytokine class that increases chlorophyll biosynthesis, cell division and cell expansion. It can increase fruit set and fruit enlargement and promote somatic embryogenesis. It works synergistically with the plant's endogenous auxin levels to increase plant growth. In mammalian systems, it has anti-mitotic and anti-migratory properties and could be a promising septin-based anti-tumor agent. 4-CPPU is soluble in ethanol and methanol.</p> <p>This product is considered a dangerous good. Quantities above 1 gram may be subject to additional shipping fees. Please contact us for details.</p>
Mechanism of Action:	<p>CPPU is a cytokinin oxidase inhibitor, which regulates cytokinin activity. It can also promote carbohydrate mobilization and modify the balance among endogenous plant growth regulators.</p>

Plant Biology Applications

4-CPPU has been used as a media supplement for Citrus to enhance somatic embryogenesis from stigma and style cell layer explants (Fiore et al, 2002). Somatic embryos arose from callus at the surface of stigma and style for both sweet orange (*C. sinensis*) and lemon (*Citrus limon*), with embryo formation ranging from 0% (2,4-D) to 16% (4-CPPU) for lemon.

The effect of 4-CPPU on fruit development was studied in young macadamia fruit. The compound reduced young fruit drop and delayed fruit drop by mobilizing carbohydrates from the leaves to the fruits, resulting in an increase in total soluble sugars and starch in the bearing shoots and soluble sugars in the seeds. CPPU reduced early fruit drop by increasing carbohydrate availability and modifying the balance among endogenous hormones (Zeng et al, 2016).

4-CPPU was found to enhance *in vitro* direct shoot organogenesis from epicotyl segments of sour orange (*Citrus aurantium*). This compound could be valuable in citrus genetic transformation protocols as it resulted in 100% direct shoot organogenesis when used at 0.05 mg/L when combined with 0.2 mg/L IAA. (Roussos et al, 2011).

References:

Curry EA and Greene DW (1993) CPPU influences fruit quality, fruit set, return bloom, and preharvest drop of apples. HortSci. 28(2):115-119

Hu Q, Nelson WJ and Spiotis ET (2008) Forchlorfenuron alters mammalian septin assembly, organization, and dynamics. J. Biol. Chem. 283(43): 29563–29571 PMID 18713753

Roussos PA, Dimitriou G and Voloudakis AE (2011) Short communication. N-(2-chlor-4-pyridyl)-N-phenylurea (4-CPPU) enhances *in vitro* direct shoot organogenesis of Citrus aurantium L. epicotyl segments compared to other commonly used cytokinins. Span. J. Agric. Res. 9(@):504-509

Zeng H et al (2016) Effect of CPPU on carbohydrate and endogenous hormone levels in young macadamia fruit. PLoS One 11(7): e0158705 PMID 27387814