PREPARATION OF SILVER THIOSULFATE (STS) SOLUTION

Silver Thiosulfate (STS) is commonly used to block the action of ethylene in plant cell cultures. Ethylene is a hormone that is present in the gaseous state. Ethylene increases during senescence and ripening, and has been shown to increase in plant cell cultures due to wounding or the presence of auxins. Silver nitrate may be used alone to block the action of ethylene but it is not transported as well as STS thus is seldom used alone.

Prepare a 0.1 M Sodium Thiosulfate (STS) stock solution by dissolving 1.58 g of Sodium Thiosulfate (Product No. S 620) into 100 ml of water. Prepare a 0.1 M Silver Nitrate stock solution by dissolving 1.7 g of Silver Nitrate (Product No. S 169) into 100 ml of water. Store the stock solution in the dark until needed to prepare the STS.

The STS solution is prepared with a molar ratio between silver and thiosulfate of 1:4, respectively. Nearly all of the silver present in the solution is in the form of $[Ag(S_2O_3)_2]^{3-}$, the active complex for ethylene effect inhibition.

Prepare a 0.02 M STS by slowly pouring 20 ml of 0.1 M silver nitrate stock solution into 80 ml of 0.1 M sodium thiosulfate stock solution. The STS can be stored in the refrigerator for up to a month. However, preparation of the STS just prior to use is recommended.

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