Glutamate is an important chemical in general metabolism. It is also a crucial mammalian neurotransmitter that is believed to be involved in a number of neurological and psychiatric disorders such as lateral sclerosis, lathyrism, autism and Alzheimer’s disease. Glutamate is also widely used as a flavor enhancer in the food industry.


4. Read optical density (OD) for time “zero” at 565 nm (520-600nm) and OD650 after a 30-min incubation at room temperature.

5. Calculation. Subtract ODs from OD650 for the standard and sample wells. Next, subtract the ∆ODwater (Std 8) from each ∆ODstandard and ∆ODsample to obtain the ∆ODs. (Where a sample blank was required, subtract the ∆ODblank from ∆ODsample to obtain the ∆ODsample.) Plot the ∆ODstandard’s and use this standard curve to convert the ∆ODsample values to sample glutamate concentration.

\[
[\text{Glutamate}] = \frac{\Delta \text{OD}_{\text{sample}}}{\text{Slope}} \quad (\text{mM})
\]

Note: If the sample ∆OD values are higher than the ∆OD value for the 2.5 mM glutamate standard, dilute sample in distilled water and repeat this assay. Multiply the results by the dilution factor.

Conversions: 1 mM glutamate = 14.5 mg/dL.

MATERIALS REQUIRED, BUT NOT PROVIDED
Pipetting (multi-channel) devices. Clear-bottom 96-well plates (e.g. Corning Costar) and plate reader.

GENERAL CONSIDERATIONS
1. This assay is based on an enzyme-catalyzed kinetic reaction. Addition of Working Reagent should be quick and mixing should be brief but thorough. Use of multi-channel pipettor is recommended.

2. The following substances interfere and should be avoided in sample preparation: EDTA (>0.5 mM), ascorbic acid, SDS (>0.2%), sodium azide, NP-40 (>1%) and Tween-20 (>1%).