

SIGMA QUALITY CONTROL TEST PROCEDURE
Enzymatic Assay of CARBOXYPEPTIDASE Y**PRINCIPLE:**

Abbreviations used:

N-CBZ-Phe-Ala = N-Carbobenzoxy-L-Phenylalanine-L-Alanine

N-CBZ-L-Phe = N-Carbobenzoxy-L-Phenylalanine

CONDITIONS: T = 25°C, pH = 6.75, A_{230nm}, Light path = 1 cm

METHOD: Continuous Spectrophotometric Rate Determination

REAGENTS:

- A. 50 mM 2-[N-Morpholino]Ethanesulfonic Acid (MES) Buffer, pH 6.75 at 25°C
(Prepare 200 ml in deionized water using MES, Free Acid, Sigma Prod. No. M-8250. Adjust to pH 6.75 at 25°C with 1 M NaOH.)
- B. 2.0 mM N-CBZ-L-Phenylalanine-L-Alanine Solution (CBZ-Phe-Ala)
(Prepare 100 ml in Reagent A using N-CBZ-Phe-Ala, Sigma Prod. No. C-1634. Facilitate solubilization by first dissolving in 2 ml of Methanol, Sigma Prod. No. M-3641. Adjust to pH 6.75 at 25°C with 1 M HCl or 1 M NaOH, if necessary.)
- C. Carboxypeptidase Y Enzyme Solution
(Immediately before use prepare a solution containing 36 - 72 units/ml of Carboxypeptidase Y in cold Reagent A.)

Enzymatic Assay of CARBOXYPEPTIDASE Y

PROCEDURE:

Pipet (in milliliters) the following reagents into suitable quartz cuvettes:

	<u>Test</u>	<u>Blank</u>
Reagent A (Buffer)	-----	0.01
Reagent B (CBZ-Phe-Ala)		3.00 3.00

Mix by inversion and equilibrate to 25°C. Monitor the $A_{230\text{nm}}$ until constant, using a suitably thermostatted spectrophotometer. Then add:

	<u>Test</u>	<u>Blank</u>
Reagent C (Enzyme Solution)	0.01	-----

Immediately mix by inversion and record the decrease in $A_{230\text{nm}}$ for approximately 5 minutes. Obtain the $\Delta A_{230\text{nm}}/\text{minute}$ using the maximum linear rate for both the Test and Blank.

CALCULATIONS:

$$\text{Units/mg enzyme} = \frac{\Delta A_{230\text{nm}}/\text{min Test} - \Delta A_{230\text{nm}}/\text{min Blank}}{(0.1915) (\text{mg enzyme/ml RM})}$$

0.1915 = Millimolar extinction coefficient of N-CBZ-Phe-Ala at 230 nm
RM = Reaction Mix

UNIT DEFINITION:

One unit will hydrolyze 1.0 μmole of N-CBZ-Phe-Ala to N-CBZ-L-phenylalanine and L-alanine per minute at pH 6.75 at 25°C, based on $E_{230}^M 1 = 191.5$.

FINAL ASSAY CONCENTRATION:

In a 3.01 ml reaction mix, the final concentrations are 50 mM MES, 2.0 mM N-CBZ-Phe-Ala, 2% (w/v) methanol, and 0.36 - 0.72 unit carboxypeptidase Y.

NOTES:

1. All product and stock numbers, unless otherwise indicated, are Sigma product and stock numbers.

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