

Lab 9: Quantitation of Proteins Using the BCA Protein Assay

Relevant Readings:

- Appendix A, page 141 of this manual
- Appendix B, page 147 of this manual
- Appendix C, page 149 of this manual
- Appendix E, page 159 of this manual
- Appendix F, page 163 of this manual

Exercise Objectives — Upon successful completion of this exercise you should be able to:

1. Give 2 examples of protein assays.
2. Name the protein assay used in this course.
3. State under what circumstances the BCA assay cannot be used.
4. State the number of steps involved in the BCA assay.
5. Describe or illustrate the reaction that occurs in the first step of the BCA assay.
6. List the factors that determine the rate of color development in the BCA assay.
7. Give two reasons to use the BCA assay.
8. Explain why BCA assay is not a true end-point method.
9. Explain the relationship between color intensity and concentration in the BCA assay.
10. Calculate the amount of protein in each fraction.
11. Calculate the total percent of protein in each fraction.

1. Introduction

There are a number of different protein assays commercially available. During a protein assay a compound is added to the sample that will change color in the presence of protein, the higher the concentration of protein in the sample, the greater the color change. The two types of protein assay most frequently used in labs are ones based on protein binding Coomassie blue dye (Bradford assay) and assays based on protein chelation with copper (Lowry and BCA assays). Choice of protein assay depends on ease of use and the compatibility of the assay with compounds present in the protein extract. While all commercially available protein assays are relatively quick and easy to perform in the lab, you will be using the BCA protein assay because it is not affected by the presence of detergents in protein samples. The BCA assay cannot be used if reducing agents (ex. mercaptoethanol) are present. Because your samples do not contain reducing agents this is not a problem.

The BCA assay consists of two steps. In the first step the protein reacts with Cu^{2+} under alkaline pH to produce Cu^{+} , producing a blue-colored product. The amount of product

Bca Lab Manual

JR Anderson



Bca Lab Manual:

This book delves into Bca Lab Manual. Bca Lab Manual is a vital topic that must be grasped by everyone, from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Bca Lab Manual, encompassing both the fundamentals and more intricate discussions.

1. The book is structured into several chapters, namely:

- Chapter 1: Introduction to Bca Lab Manual
- Chapter 2: Essential Elements of Bca Lab Manual
- Chapter 3: Bca Lab Manual in Everyday Life
- Chapter 4: Bca Lab Manual in Specific Contexts
- Chapter 5: Conclusion

2. In chapter 1, the author will provide an overview of Bca Lab Manual. This chapter will explore what Bca Lab Manual is, why Bca Lab Manual is vital, and how to effectively learn about Bca Lab Manual.
3. In chapter 2, this book will delve into the foundational concepts of Bca Lab Manual. This chapter will elucidate the essential principles that need to be understood to grasp Bca Lab Manual in its entirety.
4. In chapter 3, this book will examine the practical applications of Bca Lab Manual in daily life. This chapter will showcase real-world examples of how Bca Lab Manual can be effectively utilized in everyday scenarios.
5. In chapter 4, this book will scrutinize the relevance of Bca Lab Manual in specific contexts. The fourth chapter will explore how Bca Lab Manual is applied in specialized fields, such as education, business, and technology.
6. In chapter 5, the author will draw a conclusion about Bca Lab Manual. This chapter will summarize the key points that have been discussed throughout the book.

This book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Bca Lab Manual.

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