HORMONAL CONTROL OF GLYCOGEN METABOLISM

J. Larner, P.J. Roach, L.C. Huang, G. Brooker, F. Murad, and R. Hazen

Department of Pharmacology
University of Virginia
Charlottesville, VA 22903

OUTLINE

I. Introduction
II. Basic concepts of the regulation of glycogen synthesis and degradation
III. Altered kinase and phosphatase activity with insulin action
IV. The insulin intermediate--"X"
V. Summary and conclusions

INTRODUCTION

It is now recognized that both glycogen synthesis and degradation are controlled by covalent modification as well as by soluble cellular effectors. In general, it appears that only the hormonal controls are exerted through covalent phosphorylation and dephosphorylation. By this mechanism one cell type, the endocrine cell, communicates with another cell type, the target cell. The soluble cellular effectors appear to be influenced by nonhormonal as well as hormonal stimuli.

BASIC CONCEPTS OF THE REGULATION OF GLYCOGEN SYNTHESIS AND DEGRADATION

Figure 1 diagrams the hormonal events in outline form. The
Figure 1. Hormone cascade-general.

Figure 2. Hormone cascade-epinephrine.

Figure 3. Hormone cascade-insulin.