Protein-Chemical Aspects of Cancer*

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1. INTRODUCTION

The idea that the abnormal behavior of cancer cells is an expression of abnormalities in their chemical make-up is an old and obvious one, and the early part of this century saw a number of enthusiastic analytical attacks upon this problem by chemical investigators. That these attacks were focussed largely upon proteins is not surprising in view of the predominating position both quantitatively and functionally of this chemical class in the composition of tissue solids. However, when some premature conclusions based on faulty evidence concerning characteristic abnormalities in the amino acid content of tumor proteins were anticiplamed by further and more firmly founded data indicating absence of an obvious tumor-distinctive amino acid spectrum, interest in this line of attack waned and at the same time other aspects of cancer chemistry, such as those of carcinogenic agents and enzymatic activity, grew in importance as foci of investigative attention. While at present the available evidence speaks against a striking gross difference between "cancer protein" and "normal protein," the conclusion that the proteins of normal and malignant cells are the same is certainly not warranted. At the microscopic level of the modern cytologist, cancer cells definitely reveal morphological abnormalities (18, 32, 110) even though under the lower-power lens of the clinical pathologist the individual malignant cell shows no