Selection (S) and/or promotion (P) of chemically initiated hepatocarcinogenesis accelerate an already ongoing process. Selection and promotion could be additive or synergistic as evidenced by the analysis of the kinetics of appearance of malignant tumours in the triphasic protocol. Selection (S) and promotion (P) could, at least partly, imply genetic events leading to changes in gene expression, ploidy and possibly chromosome structure that provide growth advantages to some cell populations. It remains however to be demonstrated that such cells are the "initiated cells" which by clonal proliferation constitute the "preneoplastic lesions" from which the malignant tumour(s) arise.

The Application of Monoclonal Antibodies

Reported by: M.I. COLNAGHI
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The topic of research in this seminar devoted to monoclonal antibodies (MoAbs) attracted a large number of presentations indicating widespread interest in this subject. In fact, following Professor R.W. Baldwin's masterly Mühlbock Memorial Lecture, there were many interesting presentations dealing with this topic on various occasions throughout the 3-day meeting and concluding with this seminar on the application of MoAbs. Overall, this provided an up-to-date assessment of the status of the art of a wide spectrum of applications of MoAbs in oncology.

The results presented in this field of research appeared to arouse a general feeling of optimism which can be justified as follows: a) the ability of several MoAbs to define differentiation markers is no longer questionnable and this will certainly contribute towards increasing our understanding of malignancy; b) it has been demonstrated that some of these MoAbs are capable of predicting tumour progression and therefore special attention is now being devoted to improving and developing them as valuable prognostic tools; c) there is also no doubt as to the usefulness of several MoAbs in diagnostic procedures where they have allowed improvement of conventional methodologies in areas such as histopathology, cytology, in vivo tumour localization and detection of micrometastases in vitro.

As far as therapeutic approaches are concerned, a more cautious attitude is required, mainly due to two particular problems: a)the available monoclonal reagents are apparently never strictly tumour specific, and b) the expression of the relevant epitopes on tumour cells is often heterogeneous. Although in diagnostic and prognostic approaches the difficulties these factors present are not so limiting, in therapeutic applications (particularly those in which in vivo manipulations are concerned) there are much more serious limitations. For example, in the case of in vitro therapeutic applications, such as bone marrow purging in the context of autologous bone marrow transplantation, these limitations can be overcome by using an operationally tumour-specific pool composed of a cocktail of several different MoAbs with complementary reactivities, as opposed to the use of a single reagent. So far this alternative has been giving promising results. The same type of approach could also be adopted for in vivo therapeutic applications, but in this case it is much more difficult to attain operational specificity. Furthermore, the antigenic nature of murine MoAbs, which at present represent the majority of reagents available, imposes yet another limitation. The use of human MoAbs would definitely help to resolve this problem, but their production still involves a number of difficulties. A possible solution could be offered by application of genetic engineering techniques for the generation of what are now called 'chimeric' antibodies: reagents composed of an appropriate antigenic binding site of murine origin, whereas the rest of the antibody molecule is human. These 'chimeric' molecules should theoretically be less immunogenic than their murine counterparts.

It therefore seems that the optimistic feeling referred to above can be justified by the fact that we are now conscious of the difficulties involved in using MoAbs and, in addition, methodologies are available to surmount the problems presented in their diverse applications in cancer diagnosis and therapy.

Leukocyte Adherence Inhibition Techniques in Cancer Detection

Reported by: T. SANNER
(Laboratory for Environmental and Occupational Cancer NHIK, The Norwegian Radium Hospital, Oslo, Norway)

The leukocyte adherence inhibition (LAI) assay was developed by Dr. W. Halliday about a decade ago. The test is based on the finding that sensitized peripheral leukocytes from patients with cancer exhibit a reduced ability to adhere to a glass surface when incubated in vitro with extract from a tumour of the same type. The test provides an assessment of cellular immunity and has primarily been used in relation to cancer. At an International Workshop on LAI in Buffalo, N.Y. in 1978, coded samples were analyzed and a successful demonstration of an in vitro assay of specific antitumour immunity in humans was achieved for the first time.

Although the experimental procedure of the LAI test is simple, there are a number of unknown factors which may influence the results, and the test in its present form is not suitable for use in routine laboratories. However, in specialized laboratories the test may be a useful diagnostic tool. With the use of LAI techniques several important findings which may throw light on tumour immunology in general, and lead to the development of a simpler test system, have been made during recent years. It was therefore considered timely at this meeting to attempt to summarize the present