TWO-STAGE CARCINOGENESIS IN VITRO

A.Jepsen, D.Arenholt, A.V.Fisker and H.P.Philipsen
Department of Oral Pathology, Royal Dental College, DK-8000 Aarhus C, Denmark

An in vitro model of rat oral squamous epithelium capable of long term in vitro growth (Exp. Cell Res., 125, 141-152, 1980) was used for two-stage carcinogenesis. Subcultures (4th passage) of palatal epithelium were initiated with 4-nitroquinoline N-oxide (4NQO) for 24 hr and left to replicate DNA damage for 8 days. Subsequently, the cultures were incubated with 12-o-tetradecanoylphorbol-13-acetate (TPA) at a dose of 1 ng and 25 ng per ml medium for 24 hr every 8th day through 3 and 6 weeks, respectively. 8 weeks after initiation, the cultures were further subcultured. Cultures treated with 4NQO followed by TPA through 3 weeks showed a significantly higher growth rate than did control cultures treated with TPA or 4NQO alone or cultures treated with 4NQO followed by TPA through 6 weeks. The cultures exhibiting high growth rate appeared morphologically transformed with extremely high cell density, enhanced mitotic activity, atypical nuclei and mitotic figures, and cells were focally arranged in a whirled pattern.

Morphologically transformed cells subcutaneously implanted into nude mice developed into highly differentiated as well as anaplastic carcinomas after 4 weeks.

THE INFLUENCE OF ENDOTOXIN ON DISSEMINATED TUMOUR

Mislav Jurin and Burhan Limani
Ruder Bošković Institute, Zagreb, Yugoslavia

Two weeks after i.v. injection of fibrosarcoma cells, tumour nodules were prominent in the lungs of CBA mice. The nodules were more numerous if endotoxin of Salmonella abortus equii was injected i.p. up to four days after the tumour, and significantly reduced if endotoxin was injected later. After i.p. injection of endotoxin, phagocytosis in the lungs was suppressed for up to three days and this was followed by increased macrophage activity. Shortly after endotoxin injection, intraperitoneal macrophages became activated and destroyed tumour cells, even if transferred to a new host. The action of endotoxin was prevented by silica, indicating the detrimental role of macrophages. Furthermore, the number of lung metastases increased if endotoxin was injected up to four days after surgical removal of the local tumour and significantly decreased if endotoxin was applied after four days. The interval between experimental or natural dissemination of tumour cells and endotoxin injection was critical and the outcome depended on the modified ability of macrophages.

CASE CONTROL STUDY OF CONSUMPTION OF BETA-CAROTENE AND CANCER IN SALVADOR, BRAZIL.

A.Kalache, J.Buckley, R.Peto and R.Doll.
ICRF Cancer Epidemiology Unit,University of Oxford, Oxford, U.K.

Experimental animal research and epidemiological evidence suggest that Beta-carotene plays an important role in cancer prevention. In Salvador, Brazil a cooking oil extracted from an originally African palm tree is largely consumed by segments of the population. It is very rich in Beta-carotene, has a strong flavour and bright colour, is associated with typical local dishes and is fairly cheap - i.e. an ideal ingredient to be studied through a diet inquiry. A case control study was set up in January 1981 to find out the possible cancer protective effect of Beta-carotene. So far 600 cases have been recruited to the study. For each case a hospital control is selected and for a proportion of them a neighbourhood control is equally interviewed. Blood samples are collected and their analysis is carried out in Europe. Completion of the study is due in July 1983, and preliminary results will be available to be presented at the VII EACR meeting.