cystic cleft, follicular cyst and multilocular cysts. Rathke's cysts are remnants of hypophysial cleft and are situated in the zone between pars distalis and the neural lobe. Typical Rathke's cysts are mainly present in the forms in which the hypophysial cleft tends to obliterate, e.g. in the higher primates and some artiodactyla. Hanström observed that in such cysts the distal wall is made up of cells from the pars distalis and the proximal wall is of the pars intermedia. Although the cyst of H. flaviviridis can be classified as Rathke's cyst and is situated in the caudal lobe of the PD, its boundary is not contributed either by the PD or by the PI. The cyst wall is made up of a single, at some places double or even triple layers of flattened, cuboidal or columnar cells superimposed with a connective tissue layer. Thus, there is a definite boundary between the cyst wall and component cells of the PD.

As the content of such cysts would react with mucoid stains, they are suggested to be mucopolysaccharides. They are also known to give PAS positive reaction. In H. flaviviridis the cyst is turgid with PAS positive coagulum. Intra-cellular PAS positive droplets and globules were not iced on the epithelial cells lining the cyst. This shows the actively secreting nature of those cells. Although the presence of ciliated cysts has been reported in mammalian cysts, in the present study the cilia could not be seen among most of the cells. However, a few ciliated cells could be located under high magnification. It is difficult to say whether the cilia are absent as special techniques to demonstrate cilia are not adopted.

The author is indebted to Prof. T. Sharma, for facilities and encouragement. This work is supported by a grant from the Indian National Science Academy.

18 July 1983; Revised 19 September 1983


EFFECT OF HONEY ON THE GROWTH OF VERO CELLS

S. S. GOGATE

National Institute of Virology, Dr. Ambedkar Road, Pune 411001, India.

IN CORPORTION of natural substances in synthetic media is well known. (In India, honey is used as a vehicle in the Ayurvedic medicine for a long time). Natural honey contains sugars, like dextrose, levulose, maltose and sucrose, nutrients like Vitamin A, B complex, folic acid, nicotinic acid, pantothenic acid, riboflavin, biotin, pyridoxin, thymine and enzymes such as invertase, diastase, inulase and phosphatase.

The present communication reports the effect of honey on Vero cells. Vero cells were maintained on the minimum essential medium (MEM) with Earles base (90%) and goat serum (GS) 10%. Honey from Terminalia chebula (Hirda) from Mahabaleshwar was used. Different concentrations (10%, 5%, 2.5%, 1.2%, 0.5% (v/v) in MEM (Earles) with 10% goat serum) were added to Vero cells 1.2 x 10⁶/milk dilution bottle. The culture bottles were stopped and incubated at 37°C. The cell attachment and the growth rate were studied at the above concentrations of honey.

The culture bottles containing 1.2% honey in the medium were like control cultures while higher concentrations were toxic to the cells. The studies also revealed that higher the concentration of honey the lower was the cell attachment rate. Vero cells grown in 1.2% honey remained healthy, morphologically normal and survived up to 3 weeks with no change of the medium, whereas controls degenerated by the 10th day.
The growth rate studies supported the above observation. The control cells showed (figure 1) very short duration of lag and plateau phases whereas cells with 1% honey showed three days lag phase and 18 days plateau phase. When honey was reduced to 0.5%, 0.25%, and 0.1% the growth rate remained the same as the controls (figure 2). Replacement of MEM with Parker’s medium 199 further prolonged the plateau phase.

Effect of honey at different concentrations (10%, 5%, 2.5%, 1.2%) was also studied on other cell cultures (like HeLa, HEp-2, McCoy, PS-C, CHO, MFS-8, etc, primary chick embryo fibroblasts and human erythrocyte cultures). It was found that 1% honey in the medium is optimum for these cells except chick embryo fibroblasts. For chick embryo fibroblasts 0.5% honey in the medium was optimum (unpublished data).

Prolongation of plateau phase of LM cells in suspension by supplementation of glucose was shown by Eidman and Merchant9-10.

In conclusion the natural honey at the concentration of 1% in the medium helps to maintain the cells in healthy condition, prolongs the plateau phase and controls the cell proliferation.

The author wishes to thank the Director, Central Bee Research Institute, Pune, for the supply of honey and the Director, National Institute of Virology, for his interest in this work.

18 July 1983; Revised 26 October 1983


---

**EFFECT OF ETHYL-METHANE SULPHONATE ON TISSUE CULTURE OF GARLIC (ALLIUM SATIVUM L.)**

N. P. MALPATHAK and S. B. DAVID

Department of Botany, University of Poona, Pune 411 007, India.

Tissue culture studies of *Allium sativum* L. (Garlic) have been carried out by several workers1-4. Karyological studies by Novák7-9 show that variations may be possible in cultures. Since garlic does not reproduce sexually, it was important to induce variation through