concept of a common antigen between a host and parasite as related to disease development ought, in our opinion, to place emphasis on *parasitism* rather than on *pathogenesis*. The intrinsic ability of the Indian strain of *F. vasinfectum* to infect and colonize (*i.e.*, to parasitize) both the species of cotton, although disease manifestation is seen *only* in *G. arboreum*, is compatible with this idea.

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EFFECT OF DIFFERENT STORAGE TEMPERATURES ON KEEPING QUALITY OF AVOCADO PEAR FRUITS

IT had been known for a long time that low temperature is a good means for keeping fruit after harvest. Low temperature disorders are also a determining factor for storage ability of fruits. Prolonged storage of avocado at 5° C, however, resulted in a declining rate of CO_2 production upon removal to 15° C. Chilling symptoms appeared along with the disturbance of the climacteric pattern (Biale 1941; Pratt and Biale 1944). The lowest temperature at which a rise of respiration was noted in the fuerte avocado was 7·5° C (Biale, 1946).

Mustard (1952) found that different varieties of avocados differ in its sensitivity to chilling injury. Campbell (1960) found that chilling injury occurred in mature pollack avocados stored at 35, 40, 45 and 50° F for 19 to 22 days. Biale and Young (1962) observed that in avocados at 30° F and 35° F, the fruit does not ripen but the tissue darkens.

Aharoni *et al.* (1968) stored avocado fruit at gradually decreasing temperatures, and found that the climacteric peak and softening appeared at the same time in the fruit stored at 12° (prior to the fruit stored at 8° and subsequent to that stored at 14°, 15° and 17° C). The purpose of this work is to study the effect of various storage temperatures on the quality of avocado fruits.

Materials and Methods

Freshly harvested mature fruits of Duke avocado were sorted out for size, shape, firmness to obtain uniform samples. The fruits were washed with water, then dipped for 5 minutes in solution of 5% borax as a fungicidal treatment and the samples were placed in fiberboard boxes using three carton boxes for each treatment as replicates, then cooled to the required temperatures.

Visual evaluation of the quality was made every 2 days according to the numerical quality score as described by Abdel Kader *et al.* (1968). At the same time unusable fruits were discarded and the causes of decay were recorded. At every sorting time, chilling injury symptoms were observed and noted, and also pathogenes were identified. Experiments were repeated 2 times and the average results are presented.

Results and Discussion

The relative effects of storage temperatures on quality and decay percentage of "Duke" avocado fruits is illustrated graphically in Fig. 1. Fruits held at room temperature were the first to deteriorate. Their quality loss was mainly a result of senescence as was evidenced by the loss of firmness and the development of black colour. Fruits held at 15° C followed control fruits in their deterioration.

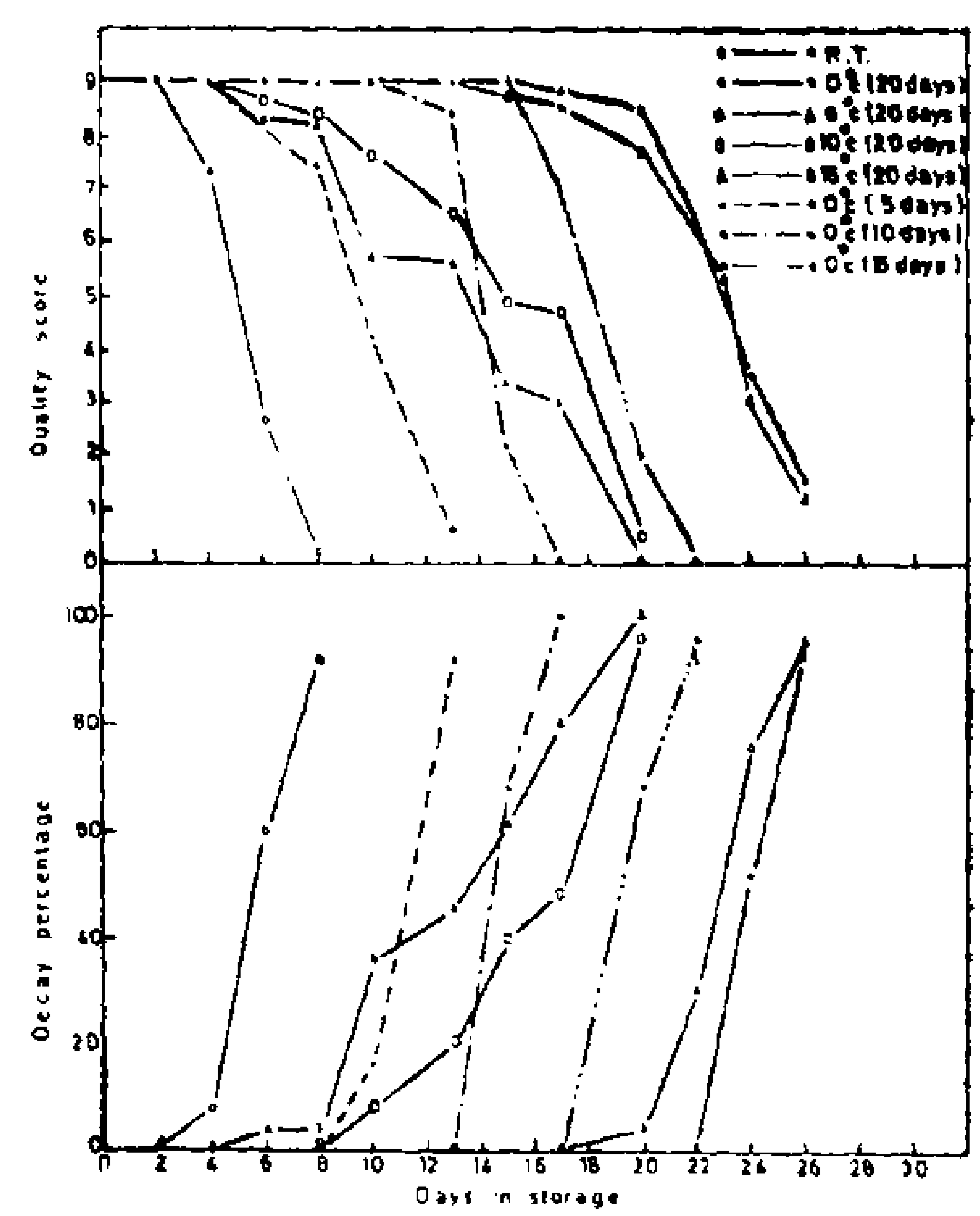

FIG. 1. Effect of temperature on quality and decay percentage of "Duke" avocado fruits during storage.

Avocado fruits that were subjected to 0° C for 5, 10, 15 and 20 days did not show any decay or deterioration symptoms and also were in good quality during storage at 0° C. However, after removal to room temperature, the rate of decay was so rapid that all fruits were decayed within 2 days. No chilling injury symptoms were noticed on fruits that were stored at 0° C or 5° C before removal to room temperature. After transfer to room temperature the flesh discoloured and some black areas appeared on the skin without developing the texture, characteristic of avocado. In the severe cases the fruits do not ripe at all.

The rate of deterioration at 0° and 5° was of the same order for a period of 20 days. On the other hand, fruits held at 10° C exhibited a faster rate of deterioration although no chilling injury symptoms were observed on them. Fruits stored at 10° C can be kept in a good condition at this temperature for approximately 2 weeks and still have several days for marketing purposes. Fruits held at this temperature deteriorated to an unsalable quality only after 18 days as compared with 6 days for those held at room temperature.

The rate of decay was lower in fruits held at 10° C than those held at room temperature, they reached 50% decay after 17 and 6 days in storage respectively.

Generally, at temperatures much below 10° C, Duke avocado fruits were subjected to the symptoms of chilling injury. Thus, a temperature of 10° C seemed to be the most suitable for storage of Duke avocado fruits.

Avocado fruits were attacked by several pathogenes as they became weak as a result of senescence or chilling injury. The identified pathogenes included: *Fusarium* sp., *Alternaria* sp., and *Penicillium* sp. in some fruits held at room temperature.

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EMBRYO DEVELOPMENT IN *EUPHORBIA PEPLUS* L.

Embryogeny in the family Euphorbiaceae is of particular interest in view of the reports of widespread occurrence of five major types of embryo development[2-6]. Despite this fact, details of normal embryogeny are available for restricted members. Within the genus *Euphorbia* L., while most of its species, so far embryologically known, display embryogeny conforming to the Euphorbia variation of Onagrad type, *Euphorbia corrigioloides*[7] follows Lotus variation. The report of Scabiosa variation of the Piperad type of embryo development in *Euphorbia rothiana*[8] has since been confuted and shown to conform to the Euphorbia variation of the Onagrad type[3,9]. But in *Euphorbia peltata*[5] and *Euphorbia preslii*[10] the embryo development follows the Chenopodiad and the Piperad type respectively. In view of this variance in embryogeny and since details of description are available for only a few species, the authors deliberate worthwhile studying the embryo development in some more species of *Euphorbia*, and also in the doubtful cases. This communication is concerned with the details of embryo development in *Euphorbia peplus* L.

The zygote (Fig. 2) undergoes a short period of rest and divides when endosperm is 10-nucleate (Fig. 1). Its first division is transverse forming a terminal cell *ca* and basal cell *cb* (Figs. 1, 3). The cell, *ca*, divides vertically (Fig. 4), while *cb* divides transversely to procreate *m* and *ci* (Figs. 5–7) thus producing a 4-celled proembryo (Fig. 6) with cells disposed in three tiers. At times the division of *cb* precedes that of *ca* (Fig. 5) but in our material these cells have never been found to divide synchronously (Figs. 4, 5). The two cells of *ca* divide by another vertical wall in a plane at right angles to the first division (Fig. 7) resulting in a quadrant; the cells of which later divide transversely resulting in octants disposed in two tiers, *l* and *l'* (Figs. 8, 9). The cell, *m*, after longitudinal and transverse divisions becomes the hypophysis (Figs. 8–16). With further differentiation the embryo passes through the globular and heart-shaped stages before it becomes fully differentiated and mature (Figs. 14–18). The cells of the tier *l* give rise to the stem apex (*pvt*) and the cotyledons (*pco*), while the derivatives of *l'* function to form the hypocotyledonary region (*phy*) and initials of the central cylinder of the stem (*icc*), *m* to the root cortex (*iec*) and root cap (*co*) and *ci* remains as 1-celled suspensor (*s*).

The course of events taking place in the different tiers of the proembryo is as follows:

In each cell of the terminal tier *l*, an oblique wall is laid down initiating two cells, the inner and