

**Summary.** In over 40% of 110 newborn infants tested, in 3% of 63 healthy children, in 18% of healthy adults and in 37% of 164 pregnant women, precipitating antibodies against cow's milk could be demonstrated. All these groups form antibodies only against the whey-proteins specifically present in milk, particularly  $\beta$ -

lactoglobuline, and not against caseine or cow's milk proteins identical with protein present in beef serum.

ANNEMARIE BÜRGIN-WOLFF und E. BERGER

*Serologisches Laboratorium des Basler Kinderspitals, Basel (Schweiz), 14. August, 1962*

### Feeding Response of Adult *Tribolium* to Carbohydrates in Relation to their Utilisation

Various species of *Tribolium* are known to flourish well on cereals and their products, in comparison with non-cereals (FRAENKEL and BLEWETT<sup>1</sup>; SMALLMAN and AITKEN<sup>2</sup>). In the course of investigations into the factors governing establishment of *Tribolium castaneum* (Herbst.) on one and not on the other source of food, study of the role of carbohydrates in stimulating ingestion of food and their nutritional efficiency for the survival of adult insects has been undertaken.

The stimulating capacity of different carbohydrates for the adult *T. castaneum* was determined by comparing the feeding response to different test diets offered singly. For this purpose, each diet was dyed with bromophenol blue, dried and powdered. About 500 mg of the test diet was offered to 20 insects, kept in glass vials, for 30 min. At the end of this period, the insects were removed, dissected and examined under a microscope. Presence of the dye within the gut would indicate ingestion of the diet. The percentage of individuals ingesting the different carbohydrates would indicate the relative feeding preference of the insects on these sugars.

Amongst the different carbohydrates tested in pure form, feeding activity of the insect was greater on sucrose and fructose than on starch, maltose, glucose, raffinose, melibiose and agar-agar. The response to the last six carbohydrates was equally poor. Addition of sucrose to agar-agar in concentrations of 5%, 50% or 75% did not elicit any greater feeding response than the pure agar-agar. However, the feeding activity of the insect on each of the carbohydrates, listed above, was significantly lower than that on wheat flour which is the natural food of the insect.

Nutritional efficiency of the carbohydrates for survival of adult *T. castaneum* was also determined by comparing the time taken for 50% mortality of individuals kept on each carbohydrate. The insects kept on starch or maltose survived for the longest period, 50% mortality of the individuals occurring in 119 days in the case of starch and in 126 days in the case of maltose. Glucose, melibiose and lactose were less efficient and supported adult life

for a period of 76–104 days. Nutritional efficiency of the remaining carbohydrates namely, fructose, sucrose, mellezitose, raffinose and cellobiose was very poor since 50% mortality occurred in 23–30 days. Relative efficiency of the carbohydrates for the adult was thus quite different from that for the larva for which sucrose was as efficient as starch, maltose, cellobiose and glucose, but melibiose and lactose retarded its growth (BERNARD and LEMONDE<sup>3</sup>).

On the basis of all these observations, it is evident that the carbohydrates, by themselves, do not stimulate ingestion of food by adult *Tribolium* and, therefore, their presence in the cereals does not seem to play much role in the insect's preference for feeding on these foodstuffs. Nevertheless, the relative proportion of different carbohydrates in the cereals (KENT-JONES and AMOS<sup>4</sup>) is correlated with the capacity of the insect to digest and absorb them (KRISHNA and SAXENA<sup>5</sup>) and also with their efficiency to support its survival<sup>6</sup>.

**Zusammenfassung.** Die Fütterungsreaktionen beim erwachsenen *Tribolium castaneum* (Herbst.) zeigen, dass keine der verschiedenen Kohlenhydrate das Fressen besonders anregt. Der Nährwert dieser Kohlenhydrate nimmt in folgender Reihenfolge ab: Stärke und Maltose; Glukose, Melibiose und Milchzucker; Rohrzucker, Fruchtzucker, Melezitose, Raffinose und Cellobiose.

S. S. KRISHNA and K. N. SAXENA

*Department of Zoology, University of Delhi (India), June 8, 1962.*

<sup>1</sup> G. FRAENKEL and M. BLEWETT, *Trans. R. Ent. Soc. Lond.* **93**, 457 (1943).

<sup>2</sup> B. N. SMALLMAN and T. R. AITKEN, *Cereal Chem.* **21**, 499 (1944).

<sup>3</sup> R. BERNARD and A. LEMONDE, *Rev. Canad. Biol.* **8**, 498 (1949).

<sup>4</sup> D. W. KENT-JONES and A. J. AMOS, *Modern Cereal Chemistry* (Northern Publishing Co. Ltd., England 1957).

<sup>5</sup> S. S. KRISHNA and K. N. SAXENA, *Physiol. Zool.* **35**, 66 (1962).

<sup>6</sup> The authors are indebted to Prof. B. R. SESHACHAR for providing facilities for work and for making valuable suggestions in the preparation of this note.

### The Suitability of Intracutaneous Infection in Guinea Pigs Induced by Virulent Tubercle Bacilli for the Use in Chemotherapeutic Trials

Intracutaneous infection of guinea pigs has been favoured by LESTER<sup>1</sup>, RICHMOND and CUMMINGS<sup>2</sup>, JENSEN et al.<sup>3</sup> and, more recently, by BURACZEWSKA et al.<sup>4</sup> for differentiation of various mycobacteria. Still more recently, this method was employed by DADDI<sup>5</sup> in chemotherapeutic trials and it was reported to be suitable also for this purpose. It is the aim of this paper to present our own results with intracutaneous infection in guinea

pigs and an experience with a model chemotherapeutic trial.

<sup>1</sup> V. LESTER, *Acta Tuberc. Scand.* **13**, 251 (1939).

<sup>2</sup> L. RICHMOND and M. CUMMINGS, *Amer. Rev. Tuberc.* **62**, 632 (1950).

<sup>3</sup> K. A. JENSEN, P. COLETOS, G. DADDI, E. FREERKSEN, and N. RIST, *Bull. Union int. Tuberc.* **24**, 81 (1954).

<sup>4</sup> M. BURACZEWSKA, M. JANOWIEC, and B. TUSZYNSKA, *Gruzlica (Poland)* **28**, 195 (1960).

<sup>5</sup> G. DADDI, *Isoxyl, a New Chemotherapeutic Agent* (Continental Pharma, Brussels 1961).