Über das Vorkommen von Ergotamin in spanischem Mutterkorn

Das Ergotamin wird nach STOLL[1] zweckmässigerweise aus einem hiezu geeigneten Mutterkorn zentraleuropäischer Provenienz gewonnen. In spanischem Mutterkorn, das vorwiegend Ergotoxin-Alkaloide enthält, wurde jedoch das Ergotamin bisher nicht aufgefunden. Ein analytisches Trennungs- und Nachweisverfahren für einige Mutterkornalkaloide, unter anderem für Ergotamin, mittels Verteilungschromatographie wurde von CARLESS[2] angegeben, der in den von ihm untersuchten drei Proben von spanischem Mutterkorn kein Ergotamin nachweisen konnte.

Wir haben das von uns zur papierchromatographischen Trennung und quantitativen Bestimmung der einzelnen Mutterkornalkaloide ausgearbeitete Verfahren[3] auch auf die Analyse von über hundert Proben von spanischem Mutterkorn angewendet und konnten das Ergotamin in sämtlichen Proben auffinden, und zwar in einer Menge von 3 bis 8% der gesamten Alkaloide. Der durchschnittliche Gehalt an Ergotamin von mehreren Tonnen spanischen Mutterkorns wurde mit etwa 5% der gesamten Alkaloide ermittelt.

Nach Abtrennung von den übrigen Alkaloiden durch Gegenstromverteilung nach HELLBERG[4] konnten wir rund 70% der analytisch gefundenen Ergotaminmenge als Phthalat[5] isolieren. Aus 2 kg spanischer Mutterkornware wurden so 120 mg Ergotaminphthalat erhalten.

Die Angabe von CARLESS[2], dass in dem spanischen Mutterkorn etwa 20% der Alkaloide als Ergosin vorliegen, in anderen europäischen Mutterkornvorkommen dagegen weniger, steht in guter Übereinstimmung mit unseren Ergebnissen.

M. PÖHM

Forschungslaboratorium der pharm.-chem. Fabrik A. v. Waldheim, Wien, den 14. Juni 1954.

Summary

Ergotamine, which usually is obtained from Central European ergot of rye, has been found for the first time to occur in Spanish ergots in an amount of 3–8% of the total alcaloids.

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Electron Microscope Study of Intact Tentacles and Disc in *Tokophrya infusionum*

Tokophrya infusionum is a small (17–50 μ in diameter) fresh-water protozoan belonging to the class (or order[1]) Suctoria. The adult form of the organism is sessile, being supported on a slender stalk which in turn is fastened to the substrate by an attaching disc. During this stage of its life, it feeds on living ciliates, such as *Tetrahymena pyriformis*[2], which come into contact with the adhesive ends of one or more of its long tentacles. After the prey is secure and paralyzed[1] the tentacles function as small tubes by means of which the contents of the prey are drawn into the body of Tokophrya.

The adult reproduces by endogenous budding, forming a succession of ciliated embryos which, after leaving the brood pouch within the parent body, metamorphose to the mature, sessile form. The parent organism retains its identity and continues to reproduce for a period of several days to several weeks before it dies. This latter feature makes Tokophrya a useful organism for studies of structural and physiological changes associated with aging[2].

Considerable interest surrounds the morphology and function of the feeding apparatus or tentacles of these protozoa as well as that of the device by which the organism adheres to a substrate and remains stationary during feeding. In some Suctoria[3] the tentacles are of two types: (a) the prehensile, which serves to capture the prey, and (b) the feeding type, through which the cytoplasm of the prey is drained into the predator. In Tokophrya, however, as in most Suctoria, both functions are performed by a single structure. This has the form of a very slender protrusion from the body of the organism, about 15–50 μ in length and $\frac{1}{2}$ μ in diameter, with a rounded knob at its end. The stalk[4] with its attaching disc is likewise a very slender extension (about 1 μ thick) from the body but nonetheless is a tough one capable of holding the organism against the tugs and pulls of many newly captured ciliates. The functioning of neither of these organelles is well understood, partly because important structural details are too small for light microscope resolution. For this reason it seems of interest to describe a few observations made on their fine structure by electron microscopy. These are preliminary to a more extensive study by these methods, of changes associated with aging.

For the purpose of these investigations Tokophrya was cultured in microdrops on either film-coated (formvar) cover glasses or electron microscope grids. Where cover glasses were used the organisms were transferred by way of the thin film to the grid by procedures outlined earlier for cultured tissue cells[5]. Where the culturing was done directly on coated grids this was unnecessary. For this latter procedure stainless steel grids were coated with formvar film under asceptic conditions and as many as 20 grids were picked up on a single cover glass. A small drop of yeast medium[6] containing Tokophrya and Tetrahymena was placed on each of the grids and the whole preparation mounted over a large well-slide. Since enough food was supplied in each drop, the Tokophrya reproduced very quickly and the young organisms settled down on the coated grid and adhered to the formvar by their attaching discs. When after 24 to 48 h sufficient organisms of the appropriate stage had accumulated in the microcultures they were fixed in vapors of 2% OsO_4 and then washed and dried, by the same procedure as that used for cultured tissue cells[5]. The dry preparations were shadowed with gold, or gold manganin, and examined.

Tentacles. In the light microscope under oil immersion the tentacle of *Tokophrya infusionum* appears as a

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