ABSTRACT

The compound eyes of the adult *Drosophila melanogaster* were fixed in 1.25 per cent glutaraldehyde and 1 per cent osmium tetroxide buffered with sodium cacodylate at pH 7.2. Double fixed specimens were dehydrated using the alcohol series and embedded in Epon 812. They were sectioned with porter blum and JUM 5B ultra-microtome and then stained with lead hydroxide and uranyl acetate. All thin sections were examined with Hitachi HS-7 or HU-11 electron microscope.

The rhabdomere of the compound eye is composed of numerous microvilli packed, arranged, and projected from inner edge of each retinal cell. Each microvillus consisted of a centrum, about 82 Å in diameter, surrounded by the substances, about 105 Å in width, which were bounded with double membrane about 44 Å in thickness.

In each inner edge of the microvilli, there was a cylinder, about 175 Å in diameter, in parallel with retinal cells, which contained a cylindrical axis about 583 Å in diameter. The surface of the outer edges of the microvilli was bounded with reticular substances about 500 Å in thickness.
横断像を表示している。全体로서の rhabdomere の数は大きさ22~25φ、個々1~1.5μm は Wolken(1957) と Deguchi(1958)の報告と一致する。先端に著明な横断面を示し、高密度の脂質状の構造を伴う。横断面は管状で、直径500~600μm の管模様を形成している。これらの脂質状の構造は Deguchi(1958) の所見に一致する。

Fig. 2 は、網状細胞の rhabdom の横断面を示す。3 個の rhabdomere が表示されている。rhabdomere の断面は円形で、細胞の基部に位置している。管模様は電子密度が高い部分を示し、Rhabdomere は中心部に直径200μm 程度の中心柱を形成している。

横断面において、この中心柱が観察される。また、鰓状毛突起表面が網状細胞の内部構造を形成している。鰓状毛突起は、網状細胞の基部に位置し、中心部の電子密度が高い部分を示している。

結論

組織の野生型の超薄切片に依存して、rhabdomere の構造は、電子顕微鏡によって観察されている。Rhabdomere は50μm の間隔を有し、脂質細胞と同様に多くの鰓状毛突起を示す。一部の鰓状毛突起の構造は約 82μm の直径を有し、中心柱とその部分を示している。直径105μm の周辺構造を示し、中心部周辺構造が鰓状毛突起を形成している。鰓状毛突起は、鰓状毛突起の上部には正染色または負染色、下部には染色を認め難く、空間的構造により考えられる。

REFERENCES

Fig. 1. Seven rhabdomere (R) are sectioned longitudinally, crossly, and slopely along the cross section of the retinal cell. ×12,000

Fig. 2. Three rhabdomere (R) are sectioned longitudinally and crossly in parallel with long axis of retinal cell. They appear spotted shape in cross section and rod-shape in longitudinal section. ×60,000

Fig. 3. A rhabdomere (R) show the cross section along the short axis of the retinal cell and in one or two places of the inside of a rhabdomere (R) there are cross sectioned cylindrical substances (C). ×60,000

Fig. 4. It shows the boundary of two retinal cells. On the boundary region there are pigments (P) and in the region of the surface there is a desmosome. ×60,000

Fig. 5. In the cross sectioned site of the rhabdomere (R) it is the gathering of the projected villi. Each fine villus is separated each other by the membrane of the boundary. ×92,000

Fig. 6. It shows the projected fine villi are also separated by the boundary membrane in the longitudinal section of rhabdomere (R). ×92,000

Fig. 7. It is a slope section of rhabdomere (R) stained with negative staining. The substances surrounding the central axis not stained by positive staining are stained by negative staining. But the area between the projected villi didn’t stained by both positive and negative staining. ×92,000