

Appearance of the Spontaneous Secretion of the Palmar and Plantar Sweat Glands in Rats during Postnatal Period

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Functional development of the palmar and plantar sweat glands in rats during postnatal period was evaluated by examining the appearance of spontaneous secretion of these sweat glands. After non-secretory period, spontaneous secretion of the palmar sweat glands began to occur between 10 and 17 days and that of the plantar sweat glands between 16 and 21 days after birth. In each individual rat, the palmar sweat glands began to secrete spontaneously 5 ± 1.5 days (mean \pm SEM) earlier than did the plantar glands.

INTRODUCTION

In rats the sweat glands are found only in the plantar and palmar surfaces (RING & RANDALL, 1947). Observations of the spontaneous secretion of these sweat glands have been done by NAKAGAWA (1950), FUJISAKI (1954), NINAGAWA (1956), BLOZOVSKI & SIVADJIAN (1959) and HAYASHI & NAKAGAWA (1963). It was reported by HAYASHI & NAKAGAWA (1963) that the spontaneous secretion of the plantar sweat glands in rats began to occur between the 17th and 30th postnatal days. SIVADJIAN & TREFOUEL (1975) reported that the palmar sweat glands in the rat began to secrete at the 9th days after birth and the plantar did at 14th days. In rats the palmar sweat glands became responsive to 10^{-5} M mecholyl a few days earlier than the plantar glands (MATSUMOTO & ABE, 1976). In the present study the appearance of the spontaneous secretion of the palmar sweat glands in rats during postnatal period was examined in comparison with that of the plantar sweat glands.

MATERIALS AND METHODS

Forty newborn albino rats of either sex of the Wistar strain were used in the present

study. They were housed under constant temperature ($25\pm 1^\circ\text{C}$). Spontaneous sweating was visualized by the iodine-starch method of WADA and TAKAGAKI (WADA & Takagaki 1948; Wada 1950). Observations were done every day during the period of 0-30 days after birth.

RESULTS

The data are illustrated in Fig. 1. Spontaneous secretion of the palmar sweat glands could not be observed in 0- to 9-day-old rats. It began to occur between 10 and 17 days after birth; it was observed in 6% of 10-day-old rats, in more than 50% of 13-day-old rats and in all of 17-day-old rats. On the other hand, spontaneous secretion of the plantar sweat glands was not observed in 0- to 15-day-old rats. It began to occur between 16 and 21 days after birth; it was observed in 4% of 16-day-old rats, in 50% of 18-day-old rats and in all of 21-day-old rats. In each individual rat, the spontaneous secretion of the palmar sweat glands was first observed 5 ± 1.5 days (mean \pm SEM) earlier than that of the plantar sweat glands. The difference was highly significant ($P < 0.01$). In the above experimental results no essential difference was found between male and female rats.

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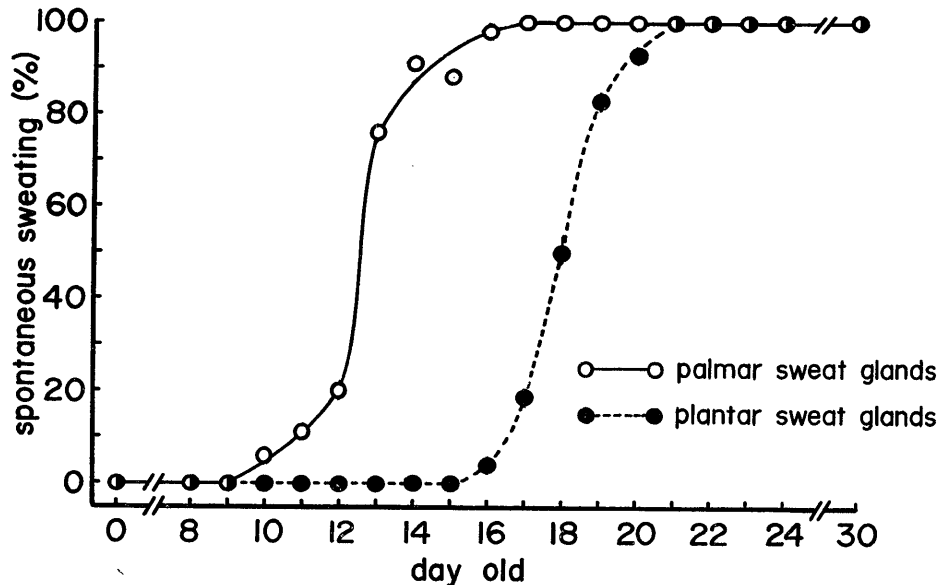


Fig. 1. No. of rats (%) with spontaneous secretion of the palmar and plantar sweat glands on each postnatal day.

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