07.30 am tiefsten, bei langsamem Anstieg erreichten sie gegen 17.00 den höchsten Wert, um von dann ab wieder zu fallen. Der Mittelwert war abends 33% höher als morgens ($P < 0{,}001$).

Die Tagesperiodik des Gesamt-O_2-Verbrauchs haben FUHRMAN, MCLIN und TURNER[6] bei Mäusen untersucht. Der O_2-Umsatz war morgens höher als abends. Es ergab sich eine positive Korrelation mit der lokomotorischen Aktivität, so dass sich die O_2-Umsatzsteigerung über die Muskelaktivität erklären liess. Die Ratte schläft während der Zeit des minimalen O_2-Umsatzes der Leber und wird erst aktiv nach Überschreiten des Maximums am Nachmittag (Figur). Gegen 18.00 beginnt sie zu laufen und zu fressen[7]. Das Maximum des O_2-Umsatzes der Leber fällt also zusammen mit dem Beginn der nächtlichen Aktivitätsphase, wenn der Leberglykogengehalt am tiefsten ist[1,8].

Summary. There is a 24 h periodicity of the rat liver tissue respiration (Qo_2) with maximal values at about 07.30 h and minimal values at about 17.00 h.

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Pituitary-Adrenal Stimulation Induced by Lethal Doses of 1-Aminocyclopentanecarboxylic Acid

Lethal doses of 1-aminocyclopentanecarboxylic acid (NSC-1026) are known to cause various pathological changes in intact rats[1,2]. The adrenal glands become very dark and hemorrhagic, the thymus gland atrophies, and ulcerous areas appear in the stomach. The conditions are not present in NSC-1026 treated adrenalectomized rats. These gross symptoms, *per se*, are indicative of adrenal hyperactivity[3,4]. This is further proven by the fact that they are not present in adrenalectomized animals.

Hypophysectomized and reserpine treated animals were employed to determine the nature of the 1026 action on the pituitary-adrenal system.

A total of 15 male Wistar rats (150–175 g) were used. Seven rats were given 1500 mg/kg NSC-1026 intraperitoneally, four received 400 mg/kg, and four were controls. All received daily subcutaneous injections of 1 mg/kg reserpine. Male hypophysectomized rats (approximately 200 g) were obtained from Simonsen Laboratories, Gilroy (California). Five rats were given 1500 mg/kg NSC-1026 intraperitoneally, five received 400 mg/kg NSC-1026, and three remained as untreated controls. All were given food and water *ad libitum*.

On the third day following treatment with 1500 mg/kg NSC-1026 and reserpine, two rats, which were near death, were killed and autopsied. These showed typical stomach ulcers, enlarged adrenals, and diarrhea. However, the thymus glands were normal in size and color. A control rat, also sacrificed at this time, possessed normal appearing organs. The remaining controls and treated rats were autopsied on the fourth day after treatment. The above results were confirmed. Rats receiving 400 mg/kg NSC-1026 were sacrificed in a moribund condition on the seventh and eighth day after injection. These also substantiated the above findings.

Hypophysectomized rats receiving 1500 mg/kg NSC-1026 died on the third and fourth days after injection. Autopsy disclosed normal appearing intestines and thymus but small adrenals. Those injected with 400 mg/kg 1026 died seven and eight days following injection and appeared similar to those treated with the higher dose. Sacrificed control rats were identical to the treated rats.

The gross pathological changes induced by lethal doses of NSC-1026 were thought to be the result of a stress response. Experimental evidence obtained by treatment with reserpine, which is reported to prevent adrenal hypertrophy by blocking the release of ACTH induced by stressful stimuli[5], seemed inconclusive. The thymus glands remained normal in appearance, but ulcers and adrenal enlargement were present. However, it is known that pharmacological blockage is often relative to the degree of the strength of the stimulating agent. Hypophysectomized animals provided the logical check on the presence of NSC-1026-induced stress and the activation of the pituitary-adrenal axis, and such activation was evident. Hypophysectomized rats showed none of the pathological symptoms of 1026 treated intact rats.

Zusammenfassung. Hypophysenlose Ratten zeigten nach Injektion von 1-Aminocyclopentancarboxylsäure (NSC-1026) keine pathologischen Symptome, wie normale mit dieser Substanz behandelte Tiere. Vergleichsversuche mit Reserpin-vorbehandelten Ratten, nachbehandelt mit NSC-1026, erbrachten keine befriedigenden Resultate.

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