delayed-type[4,11] hypersensitivity states. KIND has shown that pertussis-inoculated mice are highly susceptible to the physical stress of reduced atmospheric pressure and low oxygen tension (hypoxic decompression)[12]. We have demonstrated a similar phenomenon in mice injected with insulin[13]. These findings are consonant with the thesis that there is an inverse relationship between the glycemic state of a host and its susceptibility to a wide variety of stressful stimuli[1-5].

Several workers have suggested that hypoglycemia, such as is induced by insulin, potentiates only those anaphylactoid reactions which are elicited by polysaccharide antigens, or those containing a carbohydrate moiety[1,3]. Evidence adduced here, and elsewhere[7], indicates that, at least in the mouse, the anaphylactoid reaction elicited by a non-carbohydrate agent, proteose-peptone, can also be exacerbated by prior administration of hypoglycemic agents[14].

Effect of insulin on susceptibility of CFW mice to peptone shock

Sensitizing agent	Dose U	Challenge agent[a]	Dose mg	Dead/ total[b]
Insulin	0.8	–	–	1/10
–	–	Peptone	37.5	0/10
–	–	Peptone	75.0	3/10
Insulin	0.8	Peptone	37.5	10/10
Insulin	0.8	Peptone	75.0	10/10

[a] Challenge agent injected 10 min after sensitizing agent. All injections i.p. [b] Deaths tabulated 2 h after challenge.

Résumé. Nous avons constaté que chez les souris l'insuline possède une sensibilité élevée au peptone anaphylactoïde non-carbohydraté. Ce résultat concorde avec l'hypothèse d'une relation inverse entre la quantité de glucose dans le sang et la sensibilité d'un hôte à une grande variété de «stressors».

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Effects of Excitatory and Tranquilizing Drugs on Visual Perception. Spatial Distortion Thresholds

While the 'excitation syndrome'[1] is the most characteristic physiological feature of the hallucinogenic (psychotomimetic or psychodysleptic) drug-produced state, the important perceptual manifestation of drugs – such as psilocybin, LSD and mescaline – concerns alterations of time and visual space. Specifically the subject not only experiences an increase in data content, that is, chronosystole or time contraction relative to the observer, but also perceives objects in nearby space as enlarged and those far off as diminished in size[2-5].

This report is concerned with alterations of visual space produced by the drug psilocybin in healthy subjects.

Changes in spatial distortion threshold (SDT) were monitored for 15 college student volunteers, median age 23 years, in response to 160–200 μg/kg doses of psilocybin. The perceptual and personality characteristics of these subjects, 9 men and 6 women, have been presented elsewhere[6].

Just prior to (T_1) at drug peak ($T_2 = T_1 + 110$ min) and following the time course of the drug ($T_3 = T_1 + 280$ min) each subject viewed a horizontal black line (15 cm by 0.7 cm) against a white 250 metercandle background placed 40 cm before the eyes in primary visual gaze. This target was viewed binocularly through a pair of counter-rotating prisms (30 mm apertures, 12 mm vertex depth). While prism power was added uniformly right and left, relative to his corrected vertical phoria the subject[7] was asked to report the first deviation of the line from 'flatness'. A set of 6 observations with prism bases down, followed by another set with prism bases up, were made at T_1, T_2 and T_3 with the mean and standard deviation of each set being used as SDT measures for those points during the drug time course.

Other measurements made on these 15 subjects included pupil diameter, brightness preference, increment threshold detection for light, the Minnesota Multiphasic Personality Inventory, and taste thresholds. These will be described in future reports[8].

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[7] All subjects had a complete visual examination prior to experimentation and were corrected for single binocular vision of maximum visual acuity. There were no visual complaints nor evidence of manifest visual distortion among participants of this study. Through previous experimentation all subjects were already familiar with the psilocybin-produced experience.
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Figure 1 illustrates the most common type of SDT change observed in 13 out of 15 subjects[9]. The threshold means of a representative subject at T_1 (previous to the drug) were 3.9△ and 3.6△, base up and base down respectively. As the drug effect reached its peak, T_2, these thresholds fell to 1.7△ and 1.5△. At T_3, thresholds were once again approaching normal values: 2.9△ and 2.7△. The range of decrease in threshold (base up and base down) for the 13 subjects from T_1 to T_2 was 1.4△ to 3.0△. Two subjects showed increases in mean threshold, one of only 0.58△, the other 9.6△, probably due to interference from vivid hallucinations.

In contrast to psilocybin, an excitatory drug, which generally decreases the SDT mean, tranquilizers such as chlorpromazine increase the SDT mean. This increase is illustrated in Figure 2 after the administration of 50 mg of chlorpromazine to the same subject whose response to psilocybin is given in Figure 1.

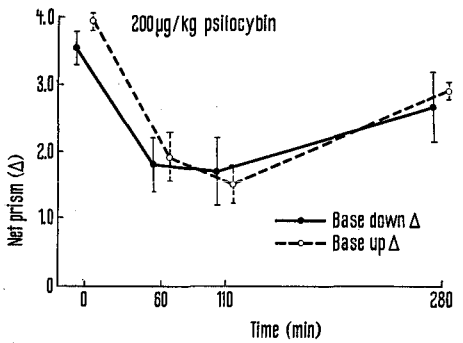

Fig. 1. Thresholds for spatial distortion induced by prism lenses prior to and during the time course of a drug experience elicited by 200 µg/kg psilocybin. Each point is the mean of 6 observations. The standard deviation about the mean is indicated by brackets.

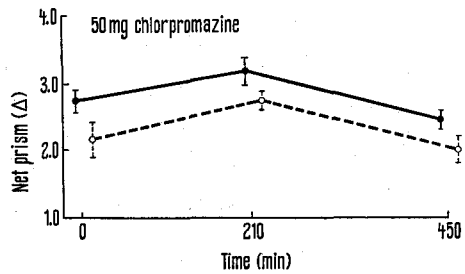

Fig. 2. Thresholds for spatial distortion induced by prism lenses prior to and during the time course of tranquilization produced by 50 mg of chlorpromazine. Each point is the mean of 6 observations. The standard deviation about the mean is indicated by brackets.

The significant effect of psilocybin on SDT is best represented through correlating the combined SDT means (base up and base down, N = 15) at T_1 with the comparable means obtained at T_2 ($r_s = +0.93$)[10,11]. This correlation is highly significant with the Wilcoxon Matched Pairs Signed-Ranks Test (N = 15) which indicates that the probability of such a distribution occurring by chance is 1 in 100[12]. Evidently a subject at psilocybin drug peak loses much of his compensation, i.e. the ability to 'correct' distorted visual space[13]. Our results imply a practical consequence; namely, that adaptation to corrective lenses should be diminished during the course of excitatory drugs of the psilocybin type and enhanced by tranquilizers. Preliminary observations show that this indeed seems to be the case[14].

Zusammenfassung. Die gerade noch wahrnehmbare, optisch induzierte Krümmung einer horizontalen Geraden wurde unter dem Einfluss von Psilocybin untersucht. Die Droge bewirkt einen deutlichen, jedoch vorübergehenden Kompensationsverlust gegenüber der optisch induzierten Krümmung.

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[9] Each subject, $^1/_2$ h before T_1, was given sufficient base up and base down SDT training such that his answers fell within a one prism (△) diopter range of < 0.5 prism diopters of the mean for a given set. He was also familiarized with the appearance of color fringes and the slight displacement of the line (less than 2° on the average) accompanying the increase in prism power. The subjects, within a few trials, learned to ignore those ancillary phenomena.

[10] The r_s statistics given are Spearman Rank Correlation values.

[11] No correlation, however, was found between change in pupil size and change in SDT from T_1 to T_2 indicating that the concomitant vegetative and perceptual phenomena are unrelated.

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[14] Acknowledgments: These studies are part of a plan for the investigation of psilocybin by R.F. approved by the Food and Drug Administration IDN 3530 and were assisted by Grant No. 66-341 of the Foundations' Fund for Research in Psychiatry, U.S. Public Health Service, National Institute of Health, General Research Support Grants, administered by The Ohio State University, College of Medicine and Comly Coleman Fund. Our thanks are due to Sandoz Pharmaceuticals, Hanover, New Jersey, who through the FDA-PHS Psychotomimetic Agents Advisory Committee provided us with psilocybin.

The Fate of Walker 256 Carcinosarcoma Cells Labeled with Tritiated Cytidine (Cr-5-H^3)

There is considerable clinical evidence to demonstrate that neoplastic cells enter the circulating blood not only as a result of invasive growth, but also during certain commonly used clinical procedures[1,2]. It has been demonstrated that cancer cells are released into the circulating blood during surgery[3,4]. The fate of the circulating cells is still a matter of speculation. It is presumed that the vast majority perish in the blood or are filtered out in the tissues where they remain in a dormant stage[5,6]. Apparently, only a small number of them reproduce to form a metastasis.

The possible relationship between circulating cancer cells and the establishment of metastases has not been explained satisfactorily despite numerous investigations and deserves more intensive study.

Recent use of the tritium-labeled DNA and RNA precursor, tritiated cytidine (CR-5-H^3), has permitted in vivo radioactive labeling of individual tumor cells.