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The US intelligence agencies' search for the "truth serum", 1941-1973

Antonio Alvarez-Cruz

Universidade de Santiago de Compostela, Spain

INFORMACIÓN ART.

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ABSTRACT

This paper is about the search for the "truth serum" (i.e., a drug that prevents an individual from lying), which the US intelligence agencies, especially the Central Intelligence Agency (the CIA) and its forerunners, carried out from 1941 (when the Office of the Coordinator of Information [COI] was founded) until 1973 (when the CIA director Richard M. Helms ordered all the MKULTRA-related documents to be destroyed). The study focused on four substances that were tested as a truth drug: scopolamine, cannabis, mescaline, and LSD. Neither with any of these drugs nor with any other substances was conclusive evidence obtained that they could be a truth serum, whereas clear proof was found that they are unpredictable and dangerous if they are misused. Its failure meant not only the abandonment of the investigation on these drugs as an aid to interrogations, but their being stigmatized as dangerous poisons which could be useful substances for therapy and research.

La búsqueda del "suero de la verdad" de las agencias de inteligencia de EEUU, 1941-1973

Palabras clave
suero de la verdad,
CIA,
control mental,
MKULTRA

RESUMEN

Este trabajo trata sobre la búsqueda del "suero de la verdad" (i.e., una droga que impida mentir a un individuo) que las agencias de inteligencia de los EEUU, en especial la Central Intelligence Agency (CIA) y sus predecesoras, llevaron a cabo desde 1941 (cuando se fundó la Office of the Coordinator of Information [COI]) hasta 1973 (cuando el director de la CIA, Richard M. Helms, ordenó destruir todos los documentos relacionados con el MKULTRA). El estudio se centra en cuatro sustancias que fueron probadas como drogas de la verdad: la escopolamina, el cánnabis, la mescalina y el LSD. Ni con estas drogas, ni con cualquier otra sustancia se obtuvo evidencia concluyente de que pudiesen ser un suero de la verdad, mientras que sí se encontraron pruebas claras de que eran impredecibles y peligrosas, si se empleaban mal. El fracaso significó, no solo el abandono de la investigación de estas drogas como una ayuda en los interrogatorios, sino la estigmatización como venenos peligrosos de sustancias potencialmente útiles en la terapia y la investigación.

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Correspondencia Antonio Álvarez-Cruz: Facultade de Psicoloxía, Universidade de Santiago de Compostela, Campus Vida, 15782 Santiago de Compostela. Spain. Fax: 881813900; Phone: 640552820; E-mail: antonio.alvarez.cruz@usc.es

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The expression "truth serum" (sometimes also named "truth drug") was coined and popularized by the US press in the first few decades of the 20th century and was eventually employed by the academic field even though it was felt that the phrase was misleading: "[a]s the drug used is not a serum, and it does not always lead to the truth." (MacDonald, 1955, p. 259). One definition of truth serum is a drug that could place the nervous system in a state that prevents an individual from lying, a definition based on the idea that memories might be accessed by interrogating individuals in altered states of mind (Winter, 2005).

In the academic field, the use of a chemical to induce altered states of mind was tested in the 1920s by psychiatrist William Bleckwenn from the University of Wisconsin, who employed narcosis, "[a] state of deep sleep or unconsciousness, more or less prolonged, and quite rapidly induced by means of drugs," as a therapeutic measure in the clinical management of various neuropsychiatric conditions (Bleckwenn, 1930, p. 1168). For instance, Bleckwenn's 'off-label' use of sodium amytal, a barbiturate which had been mainly used as a surgical anesthetic until then (Bleckwenn, 1930), led to the discovery that in small doses, the drug paradoxically allowed otherwise inaccessible catatonic patients to be free from their stupor, such that the psychiatrist could conduct patient interviews and talk therapy (Gershon & Shorter, 2019). Similarly, Lindemann (1932, in Gershon & Shorter, 2019) observed that 30 psychiatric patients who had mutism, when given sub-anesthetic doses of sodium amytal, opened up. Thorner (1935, in Gershon & Shorter, 2019) transcribed the sodium amytal interviews with catatonic patients, for a paper where the term 'psychopharmacology' was first used (Lehmann, 1993, in Gershon & Shorter, 2019). Bleckwenn's innovative experiments with narcoanalysis, or psychotherapy conducted under the influence of drugs, laid the foundations of the modern field of psychopharmacology (Janik, 2015).

In July 1941, President Franklin D. Roosevelt created the Office of the Coordinator of Information (COI), a central intelligence agency that would collect, coordinate and analyze information on World War II (WWII), and conduct propaganda and covert operations, placing General William J. Donovan in charge (Simpson, 1994). By early 1942, the White House split the official propaganda functions into a new agency, which eventually became the Office of War Information (OWI), while Donovan reorganized the intelligence, covert action, and concealed propaganda functions under high secrecy as the Office of Strategic Services (OSS) (Simpson, 1994). The OSS was dissolved in September 1945 by President Harry S. Truman, and most of its intelligence collection and psychological warfare staff were transferred to the Department of State; nevertheless, in January 1946, Truman established the National Intelligence Authority (NIA) as well as the Central Intelligence Group (CIG), which was replaced by the Central Intelligence Agency (CIA) in 1947 (Simpson, 1994).

Practically since its foundation, high-ranking officials in the CIA had been convinced of the existence of "[a] way to control the human mind" (Kinzer, 2019, p. 58). To find the "way" to do this, they worked relentlessly by keeping alive the legacy of the initiatives created by the OSS, as well as the programs designed by the CIA which echoed such events as the Nazis' mescaline experiments and the discovery of lysergic acid diethylamide (LSD) (Marks, 1979). They did so because, although areas like hypnosis and electroshock aroused interest for the researchers of the agency, "[d]rugs fascinated them most." (Kinzer, 2019, p. 58).

According to the CIA, there are similarities between police interrogations using truth serums and narcoanalysis, although each has different objectives (CIA "Truth" Drugs, 1961). In the latter, the psychiatrist is interested in the psychological truth of patients, often fantasies and delusions which the drug induces them to express, since these deliriums may be more important for their recovery than accurate memories of past incidents. On the other hand, the police investigator tries to worm out the empirical or probative truth of the interrogatee, namely, information that can be accepted "[i]n evidence by a court of law" (CIA "Truth" Drugs, 1961, p. A1).

Scopolamine

Even before barbiturates, the first drug investigated as a viable truth serum was scopolamine (Winter, 2005), an alkaloid with psychoactive properties that can be found in plants such as henbane (*Hyoscyamus niger*), belladonna (*Atropa belladona*), thorn apple (*Datura stramonium*) and mandrake (e.g., *Mandragora officinarum*). However, it did not from these plants but from the dried rhizome of a similar one, *Scopolia carniolica*, from which Ernst A. Schmidt, a German professor at the University of Marburg, first isolated an alkaloid constituent and named it scopolamine (Geis, 1959; Winter, 2005).

It was Robert E. House, an obstetrician in Ferris (Texas), who noticed in 1916 that scopolamine could be a truth serum when, by administering it combined with morphine to induce his patient into a "twilight sleep"[1], he observed that this led to a rise in accuracy in the responses of the apparently asleep patient (House, 1922). The physician assessed the possibility of scopolamine use in criminology on February 13th, 1922 (the first public test), dispensing the drug to two Dallas County jail convicts (Texas), W. S. Scrivener, a self-confessed thief who had, nevertheless, denied his participation in another robbery, and Ed Smith, an Afro-American man accused of murder. The testimony under the influence of the drug of the former served as an example of the technique's efficacy, while that of the latter led to his release from his 15-year jail sentence (House, 1922; Winter, 2005). After several experiments and public demonstrations, House concluded that scopolamine was a truth serum that allowed non-offenders to be distinguished from culprits, although later studies were less favorable (Geis, 1959; MacDonald, 1955; Winter, 2005).

At the beginning of WWII, a committee formed of scientists was set up in the US to investigate the use of drugs to interrogate prisoners of war (POWs), in response to the request from the Military Intelligence Service (MIS) chief General George V. Strong, who had asked for effective substances from the National Defense Research Council

[1] Translated from the German word *Dämmerschlaf*, state of analgesia, usually associated to amnesia, produced by a combination of morphine and scopolamine which started to be used in obstetrics in Freiburg, Germany (the technique is also known as "Freiburg method"), after having been proposed by the Austrian physician Richard von Steinbuchel in 1902, and developed by the doctors Carl Joseph Gauss and Bernhardt Krönig (Geis, 1959).

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(NDRC) to extract information from captured German U-boat officers (Albarelli, 2009). Similarly, a proposal was submitted to the COI by Arthur U. Pope, an archaeologist and expert in Persian art and culture, who was chairman of the Committee for National Morale (CNM), a patriotic confederation that included scientists such as Gordon Allport, Harold Abramson, and Margaret Mead (Albarelli, 2009).

Scholars affiliated with Pope's committee and COI researchers agreed to cooperate so the scopolamine-morphine mixture could be tested as a potential truth serum (Albarelli, 2009). The effects of the drug were assessed in experiments conducted on mental patients at St. Elizabeth's Hospital in Washington, D.C. and on inmates at the Maryland House of Corrections, but the results were not successful. Some subjects slipped into comas, or they hallucinated to the point of losing touch with reality. When one subject nearly died of heart failure, those experiments were abandoned (Albarelli, 2009). Nevertheless, research on scopolamine later continued. The Technical Services Staff (TSS) chief, Sidney Gottlieb, considered the drug to be one of the few chemicals which produces amnesia (Albarelli, 2009). Interest in the substance extended to the academic field. For example, Clark and Beecher (1957) asked paid volunteer male college students to withhold information (about relatives, fake military intelligence information, etc.) from interrogations under the influence, in different experiments, of intravenously administered morphine, amphetamine, methamphetamine, sodium amobarbital, ethyl alcohol, thiopental, pentobarbital sodium, mescaline, and scopolamine. Despite being drugged, the subjects managed to refuse to reveal the information requested except on two occasions, when the names of close relatives were disclosed, allegedly as slips of the tongue during dissociative ramblings. These subjects had been intoxicated with a combination of thiopental and scopolamine (Clark & Beecher, 1957).

Cannabis

In spite of the unsuccessful results, the NDRC (in close collaboration with the OSS) managed to form a group of scientists to work secretly for the Truth Drug (T. D.) Committee, first under the auspices of the MIS and, from January 1943, under the control of the OSS, with the aim of analyzing whether drugs would be feasible for interrogating POWs (Albarelli, 2009).

In a T. D. Committee report dated June 2nd, 1943 (Report on T. D., 1943), the 13 members of this secret group were named, among whom were the psychiatrists Winfred Overholser (chair of the committee, professor at George Washington University and Director of St. Elizabeth's Hospital), and Lawrence S. Kubie (Associate in Neurology at the Neurological Institute of New York City), the liaison officers Harry Anslinger (Commissioner of Federal Bureau of Narcotics [FBN]), and Admiral Charles S. Stephenson (Navy Bureau of Medicine and Surgery), and the OSS agent George H. White. The committee exclusively informed Stanley Lovell, the head of the OSS's branch of scientific research and development, who, in turn, passed the information to William Donovan, the director of the OSS (Albarelli, 2009).

At his first meeting with the committee, Lovell emphasized the urgent need to accelerate the project, mainly in response to the abovementioned General Strong's request to the NDRC, as well as the beliefs of Pentagon officials that the Russians and the Germans had already developed an effective truth drug (Albarelli, 2009). According to Lovell and his chief assistant, Allen Abrams, the truth drug that the committee had to find, it must: a) be administered without the subject's knowledge; b) induce a talkative mood and, if possible, full exposure of the truth, as the subject knew the truth; c) not be habit-forming or physiologically harmful; d) leave no remembrance or suspicion of any kind (Albarelli, 2009, pp. 215-216).

When the OSS initially took the project over from the MIS, Donovan had instructed Lovell to work closely with Dr. Roger Adams, an organic chemist from the University of Illinois working with the NDRC, who before WWII had written numerous papers on drugs, as well as being a FBN consultant (Albarelli, 2009). According to FBN files, in 1941, Adams and Dr. Walter S. Loewe, of the University of Utah, had produced two highly active tetrahydrocannabinols (THC) and a synthesized THC by chemical modification (Albarelli, 2009).

The Report on T. D. (1943) reveals that cannabis (*Cannabis indica*) was chosen as the truth drug and three varieties were selected for study: cannabinol from Indian Charis, THC acetate, a derivative of this, and synthetic cannabinol, the second variety being the final choice. Inhalation from cigarettes was the recommended way of consuming it, using standard cigarettes injected with .02 grams of [Adams-] Loewe's acetate by means of a ¼ cc tuberculin syringe and a specially prepared #22, 1½ inch hypodermic needle, at maximum viscosity so that it could be transferred from the needle (Report on T. D., 1943).

The report stated that the effects of the THC acetate are similar to those of alcohol in which small amounts provide relaxation, moderate amounts result in loquacity and euphoria, and large amounts lead to stupor and lethargy. Even though this cannabinoid may blur memory for details, according to the report, it does not regularly produce amnesia throughout the effective period of the drug, or significant hangover effects. The report concluded that the substance does not cause immediate or automatic revelations of secrets, like a perfect, but unreasonably optimistic "truth drug" would do, it went on to say, but it does induce "[a] psychological state of relaxation, talkativeness, and irresponsibility, which might be extremely useful to a skilled interrogator,". However, the definitive effects of the drug depend on field testing, finished the report (Report on T. D., 1943, p. 3).

The alleged first field test of these marijuana-laced cigarettes took place on May 27th, 1943, on August Del Grazio, a "notorious New York gangster"[2], which he is referred to in OSS documents (Marks, 1979, p. 6), widely known as "Little Augie", and previously, "Augie the Wop", according to George H. White, one of the T. D. Committee members who had already been acquainted with the mobster and to whom he administered the drug (Albarelli, 2009, p. 221). White did so by inviting the gangster round to his apartment for "a smoke and a chat", and over the next two hours the mafioso revealed information of the

[2] Del Grazio's name was removed by the CIA from the OSS documents that described the incident, but his identity was learned from George H. White's papers, which his widow subsequently donated to Foothills College in Los Altos, California. CIA officials cut out virtually all the names from the roughly 16,000 pages of its own papers and a few from the OSS that it released to John Marks under the Freedom of Information Act (FOIA). However, many of the names could be found via collateral sources (Marks, 1979).

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drug trade which was so sensitive that the CIA redacted it from the OSS documents it released 34 years later (Marks, 1979, p. 7).

Thus, the experiment was considered successful for "loosening the subject's tongue", and although members of the T. D. Committee were skeptical about the concentrated marijuana having the ability to encourage people to confess their deepest secrets, they authorized White to push ahead with the testing (Marks, 1979, p. 7). In the next stage, White and a counterintelligence collaborator were lent more than a dozen files by the FBI and tested out the drug on soldiers who were suspected of being Communists who were at military camps outside Atlanta, Memphis, and New Orleans (Marks, 1979).

Mescaline

Mescaline (3,4,5-trimethoxyphenethylamine) is a naturally occurring alkaloid mainly found in cacti such as the peyote (*Lophophora williamsii*) found in North America, and the San Pedro (*Echinopsis pachanoi*) located in South America, like the Peruvian torch (*Echinopsis peruviana*), the Bolivian torch (*Echinopsis lageniformis*), and the guamacho (*Pereskia aculeata*), as well as in some members of the Fabaceae family, like the guajillo (*Acacia berlandieri*) (Vamvakopoulou et al., 2023). The most significant type is peyote, mainly originating from the mountainous regions of Central Mexico and Southern Texas (Dinis-Oliveira et al., 2019).

Mescaline was first isolated in 1896 by the German chemist and pharmacologist Arthur Heffter and synthesized in 1919 by the Austrian chemist Ernst Spath (Vamvakopoulou et al., 2023). Like psilocybin and LSD, mescaline achieves its mind-altering effects (including euphoria, hallucinations, and depersonalization) primarily through the 5-HT2A receptor, which is triggered by the neurotransmitter serotonin (e.g., Dinis-Oliveira et al., 2019). Nevertheless, unlike the other psychedelics, mescaline is a phenethylamine, a group that includes drugs such as MDMA (3,4–methylenedioxymethamphetamine, better known as *ecstasy*) and amphetamines (e.g., Bender, 2022).

The first indication that mescaline may have been used for interrogations came from an intercepted message received by British intelligence on July 24th, 1942, in which an SS–Führer in Dnjepropetrowsk (Ukraine) requested the delivery of 50 g of mescaline for interrogation purposes from the medical headquarters of the SS in Berlin (Streatfeild, 2007). Since 1943, German military physicians working at the Dachau and Auschwitz concentration camps had experimented with barbiturates, morphine derivatives, and mescaline for interrogation purposes (Passie & Benzenhöfer, 2018). According to Walter Neff, working as a prison medic, who had performed these experiments at Dachau, the aim was "[t]o eliminate the will of the person examined," (Marks, 1979, p. 5). After research on 30 prisoners, the leading camp physician Dr Kurt Plötner concluded that "[t]he examining person succeeded in every case in drawing even the most intimate secrets from the [prisoners] when the questions were cleverly put" (Streatfeild, 2007, p. 40). Despite these apparent successes, Plötner concluded that mescaline was "[t]oo unreliable to be a truth drug. Sometimes it worked, sometimes it didn't." (Streatfeild, 2007, p. 40). The Nazis went on to try hypnosis in combination with the drug, but they apparently never felt confident that it would allow complete control over their victims' minds (Marks, 1979; McCoy, 2006).

At the beginning of the 1950s, the US Army was interested in using hallucinogens as potential chemical weapons (Barrett v. United States, 660 F. Supp. 1291 [S.D.N.Y. 1987]). An internal memorandum of the Army Chemical Center written in 1951, proposed that contracts be established to study psychochemical agents in human beings under controlled conditions, and commented that the New York State Psychiatric Institute (NYSPI) could become a contractor (S.D.N.Y. 1987). In the same year, the Army Chemical Corps (hereafter, the Corps) and the NYSPI agreed on contracts DA 18-108-CML-2913 and -2914, for the psychological and psychiatric investigation, respectively, of potential chemical warfare agents on psychiatrically liable and control human subjects (S.D.N.Y., 1987). Under these contracts (integrated on May 26th, 1952), the Army was responsible for synthesizing and supplying certain mescaline derivatives to the NYSPI (which had investigated mescaline sulfate for clinical use), as well as performing animal toxicity tests for setting safe initial doses for humans. The NYSPI had to supervise the protocols and procedures to perform the clinical tests on the subjects, a duty entrusted to the Institute's experimental psychiatry division's head, Dr. Paul Hoch (S.D.N.Y., 1987). Born in Budapest in 1902, Hoch had attended medical school in Hungary and Germany, then, in the late 1920s, studied psychiatry and neurology at the Burgholzli Psychiatric University and Mental Hospital (Zurich), under Dr. Eugene Bleuler (Albarelli, 2009).

In November 1952, the Medical Director of the Corps delivered five new mescaline-derived chemicals to Hoch, synthesized by Dr. Amedeo Marrazzi (Passie & Benzenhöfer, 2018; S.D.N.Y. 1987). In order to establish safe human doses for a new chemical, the preferred method in the 1950s was first to determine with other species the Lethal Dose-50% (LD-50: the substance amount that would kill 50% of the test subjects), which, in those years, could be obtained from just one species, usually mice (S.D.N.Y., 1987). The LD-50 was then divided by the average body weight of the animals tested and this information, expressed in terms of mg/kg of body weight, could be applied, with care, to other species. An accepted practice to determine a safe dose to begin experimentation on human beings with a new chemical was to divide the LD-50 for other species by 100 (S.D.N.Y., 1987).

Harold Blauer, a 42-year-old professional tennis player, admitted himself to the NYSPI on December 5th, 1952, suffering from depression, for which he had been a patient at the Roosevelt and Bellevue Hospitals two months earlier. In the NYSPI, Blauer was diagnosed as a pseudo-neurotic schizophrenic and assigned to the care of Dr. George Schnack, a psychiatry resident who treated him with talk therapy, which was able to improve the patient (S.D.N.Y., 1987). In addition to this therapy, Blauer was used as an unwitting subject (never giving written consent, unrequired in the early 1950s) in the chemical studies that the NYSPI performed under contract with the Corps. The injections he would receive during these trials did not serve any therapeutic purposes, but rather to collect the data the Army required for its research into mescaline derivatives as potential chemical warfare agents (S.D.N.Y., 1987). On January 8th, 1953, between 9:53 and 9:57 a.m., Blauer was injected with 450 mg (6.47 mg/kg of body weight) of 3,4–methylenedioxyamphetamine (MDA)

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(Passie & Benzenhöfer, 2018), or EA 1298 (its military code); the fifth injection, following the protocol Hoch had designed, was sixteen times the strength of Blauer's only other dose of EA 1298 (0.4 mg/kg), which had been his first injection. Soon after that he was pronounced dead, at 12:15 p.m. (S.D.N.Y., 1987).

In relation to the mescaline derivatives it supplied to the NYSPI, the Corps had reported LD-50s only for mice. In the case of EA 1298, the Corps considered that since a dose of 12.5 mg/kg had not killed any of the 20 mice, and with another dose of 100 mg/kg, all five mice died, the LD-50 of EA 1298 was between 20 and 80 mg/kg, without adding any mid-range figure (S.D.N.Y., 1987). After Blauer's death, the Army asked the Department of Pharmacology of the University of Michigan to do LD-50 studies on mescaline and seven derivatives, including EA 1298. The University provided LD-50s for mice, rats, guinea pigs (intra-peritoneal administration), dogs, and rhesus monkeys (intravenous administration) (Hardman et al., 1973; Passie & Benzenhöfer, 2018; S.D.N.Y., 1987).

Although the data provided by the University of Michigan "[d]oes not permit satisfactory prediction of the pharmacologic actions of these agents in man" (Hardman et al., 1973, p. 308), they might have been used as an approach. Hence, from that data, the reported LD-50 of EA 1298 for mice was 68 mg/kg (Hardman et al., 1973; Passie & Benzenhöfer, 2018), which was within the range (20-80 mg/kg) provided by the Corps (S.D.N.Y., 1987). The first dose of EA 1298 received by Blauer in the NYSPI (0.4 mg/kg) followed, in broad terms, the accepted practice of using a hundredth part of the LD-50 like in other species, as an initial safe dose for humans (S.D.N.Y., 1987). However, that LD-50 had been set for intra-peritoneal administration, higher than for intravenous administration (S.D.N.Y., 1987). From the two species assessed by the University with intravenous administration, dogs were shown to be more sensitive since all the compounds seemed to produce hallucinations (inferred from behavioral responses) in them, while only three (none of them mescaline) produced apparent hallucinations in monkeys (Hardman et al., 1973). According to the University, the LD-50 for EA 1298 in dogs was 7 mg/kg (Hardman et al., 1973; Passie & Benzenhöfer, 2018; S.D.N.Y., 1987), which suggests that Harold Blauer received, for his fifth administration of the injection protocol in the NYSPI, 92 times the initial safe dose recommended for experimentation with EA 1298 in human beings. In 1987, Blauer's oldest daughter Elizabeth Barrett, who had filed a $8.5 million suit against the US Government, was awarded a little over $700,000 (Albarelli, 2009).

LSD

LSD is a psychotomimetic, as with mescaline and psilocybin, which means that its effects on perception, emotion and thinking processes could be likened to the symptoms of psychosis. Nonetheless, unlike these hallucinogens, LSD does so even in extremely small doses. The threshold amount needed for a psychic effect to occur with the drug has been said to be about 25 µg (Abramson, 1967) or 15 µg (Baquiran & Al Khalili, 2022), a dose of about 100 to 200 µg *per os* (orally) often triggering a dramatic reaction similar to that of a psychotic state (Hofmann, 1980). "[U]ntil then no known substance had displayed even the slightest psychic effect in fraction-on-a-milligram doses. An active compound of such potency seemed almost unbelievable" (Hofmann, 1980, p. 21).

The beginning

The ergot enzyme can be found naturally in the fungus *Claviceps purpurea*, which grows parasitically on rye and other grains (Hofmann, 1980), infecting plant ovaries with a dense tissue, gradually replacing the grain with a solid, purple, rounded mass called the sclerotium (Fuller, 1968). Even though the ergot has been recognized for centuries as having therapeutic properties (being used in the tenth century in Thuringia to speed up childbirth, for example), it has been known to cause spasms and hallucinations, being associated in Europe with a medieval illness known as *Saint Anthony`s Fire*[3], which turned fingers into black stumps and produced insanity followed by death (Fuller, 1968; Marks, 1979).

Walter A. Jacobs and Lyman C. Craig, of the Rockefeller Institute of New York, named lysergic acid the common nucleus of all ergot alkaloids, which, in 1934, they were able to identify in an alkali digest of ergotinine (Hofmann, 1980). Albert Hofmann, a research chemist at the pharmaceutical company Sandoz, in Basel (Switzerland), synthesized LSD in 1938 to create an analeptic, a drug that stimulates blood circulation and respiration (Hofmann, 1980). On April 16th, 1943, he noticed, while repeating the synthesis of LSD, that the molecule had unusual effects (a "bizarre experience", he wrote) on humans if it accidentally entered the skin (Baquiran & Al Khalili, 2022; Hofmann, 1980). Intrigued by the strange experience, Hofmann decided to conduct an experiment with himself as the subject, and, three days later, he swallowed 250 µg of the substance he had been testing, the first person ever to use it. The chemical Hofmann ingested was the twenty-fifth in a series of lysergic acid derivatives that he had compounded, which he named LSD-25 (Hofmann, 1980; Kinzer, 2019), a name which LSD, a "[t]asteless, odorless, and colorless" substance (e.g., Abramson et al., 1955, p. 369), is often referred to. In the next few months, Hofmann tested LSD on volunteers from the company where he worked and documented the unique effect of LSD on the human mind, pledging to find a treatment for mental disorders (Kinzer, 2019).

Finally, Sandoz produced the drug under the name *Delysid*, whose instructions for use pointed out its convenience for analytical psychotherapy (to release repressed material) and for experimental studies on psychoses, suggesting the psychiatrist took the drug himself to gain an insight into the ideas and feelings of patients; but the warnings also stated that the drug may intensify pathological mental conditions (Hofmann, 1980).

[3] Its name comes from the patron saint for victims of ergot poisoning (ergotism), Saint Anthony of the Desert (also known as *of Egypt*, *the Anchorite*, etc.). This was because after his remains were moved from Constantinople to the parish church of the Motte-au-Bois (France) in 1083, the victims of the ergotism epidemic of 1090 sought his protection. Among them were a nobleman and his son, who they claimed had become cured thanks to the saint's relics, leading to the establishment of the Order of Saint Anthony in his honor to cure those affected by the disease (Fuller, 1968).

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The weapon

In November 1948, Luther W. Greene, scientific director of the Army's Chemical and Radiological Laboratories at Edgewood Arsenal[4] (Maryland), received a secret communication from Dr. John P. Clay, a high-level Army consultant to the Chemical Division at the European Command Center in Heidelberg (Germany), informing him about the existence of a powerful hallucinatory agent, discovered by scientists at the Sandoz company in Basel, which was labeled LSD-25 for its laboratory code (Albarelli, 2009). With the information that he gathered, Greene wrote "Psychochemical Warfare: A New Concept of War", a report which pushed for the government to start systematically testing LSD and over sixty other mind-altering compounds that could eventually be turned into weapons to conquer an enemy without needing to kill them (Khatchadourian, 2012; Kinzer, 2019). This idea was taken further in the mid-1950s by the head of the Corps, Major General William Creasy, who put forward the concept of "war without casualties", in which a hallucinogenic cloud would be dispersed over the enemy forces, halting even the most elite units without lethal consequences (Kamienski, 2022).

After reading Greene's report, the director of central intelligence (DCI), Admiral Roscoe H. Hillenkoetter, asked President Harry S. Truman to authorize the drug research proposal for the CIA to conduct (Kinzer, 2019). Upon Truman's consent, Hillenkoetter employed some CIA officers to collaborate with Special Operations Division (SOD) chemists at Camp Detrick (Frederick, Maryland) in 1950, in an operation secretly known as MKNAOMI[5] (Kinzer, 2019).

On April 20th, 1950, Hillenkoetter decreed the creation of a new top-secret program code-named *Bluebird*, with the aim of investigating mind control techniques (Kinzer, 2019; Ross, 2006). A new DCI, General Walter B. Smith, took over in October 1950, and hired the former OSS spymaster Allen W. Dulles as the CIA's deputy director for plans, whose responsibilities secretly entailed monitoring the Agency's covert operations, especially Bluebird (Kinzer, 2019). In 1951, Dulles hired Sidney Gottlieb, a biochemist who worked in Washington; on August 20th, 1951, Gottlieb ordered Bluebird's operations to be escalated and centralized, under the new name *Artichoke*. The plans that had previously been drawn up and which focused on researching the effect of drugs on volitional acts were thus to be incorporated (Kinzer, 2019).

On November 4th, 1952, the new US president Dwight D. Eisenhower promoted Smith to Undersecretary of State, choosing Dulles as the new DCI. On April 13th, 1953, Dulles formally approved the research project which Richard M. Helms, the chief of operations for the CIA's Directorate of Plans, had proposed ten days before, with three features: a) $300,000 of funding to begin with which would be exempt from financial controls; b) permission to carry out research and experiments whenever deemed necessary, "without the signing of the usual contracts or other written agreements"; c) a rebranding of the operation conducted by Gottlieb, which would now be known as MKULTRA (Kinzer, 2019, p. 72; Marks, 1979, p. 57). This meant that the funding would be for "[1]49 MKULTRA subprojects, many of which appear[ed] to have some connection with research into behavioral modification, drug acquisition and testing or administering drugs surreptitiously." The subprojects were carried out in "[4]4 colleges or universities, 15 research foundations or chemical or pharmaceutical companies and the like, 12 hospitals or clinics (in addition to those associated with universities), and 3 penal institutions" (Admiral Stansfield Turner, DCI, in Senate, *Project MKULTRA*, 1977, p. 5, 7).

Some makers and collaborators of MKULTRA

At the end of 1951, Gottlieb asked the allergist Harold A. Abramson, one of the few scientists in the world who had used and administered LSD, to guide him through his first hallucinogenic trip (Kinzer, 2019). After his experience, Gottlieb, who believed that LSD was the most likely substance that would allow people to be controlled covertly, sped up his experiments, firstly with volunteers, including CIA colleagues and scientists from the SOD at Camp Detrick, and later with Agency trainees, who were given LSD unawares (Kinzer, 2019). Regarding Abramson, he prospered with MKULTRA, which financed his research by means of Subprojects 27, 33, and 40, seemingly subsidized by the Office of Naval Research (Ross, 2006), a front for the CIA's covert funding (McCoy, 2006). In a memorandum contained in the Subproject 27 (1953) file, how the money would be assigned to this program was specified, in addition to payments for a main investigator, a neurophysiologist, and two psychologists, who would be allocated to support research on issues related to LSD, such as potential antidotes and desensitization to the drug (MKULTRA Subproject 27, 1953). In Subproject 40 (1953), the feasibility of employing aerosols to deliver several psycho-chemicals of interest for the TSS was added as a new object of study (MKULTRA Subproject 40, 1953).

MD for Columbia University in 1923 and National Research Council Fellow at Berlin's Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry from 1926-27, Abramson, during WWII, set up penicillin aerosol therapy for lungs from 1942-43 for the Technical Division of the Chemical War Service, and was awarded the Legion of Merit for exceptionally outstanding service to the US (Albarelli, 2009). Although according to the Medical Directory of New York State, his practice was limited "[t]o Immunology and Allergy," without any mention of training or credentials in psychiatry (Albarelli, 2009, p. 124), Dr. Margaret W. Ferguson, a psychiatrist who had been hired by Abramson for work on his research project, stated that he was "[a]n allergist who [was] in charge of a series of psychiatric experiments." (Albarelli, 2009, p. 125). These consisted, Ferguson said, of administering hallucinogens, mostly liquid LSD, to university students and allergy patients, in an unused space in Mount Sinai Hospital and at Abramson's Long Island office, so the proper dosage of the drug could be determined (Albarelli, 2009).

[4] Sixty miles northwest of Washington, D.C., originally called Gunpowder Neck Reservation when the War Department purchased the site in a fit of urgency in 1917 during the First World War (WWI), when weaponized gas (first chlorine, and later, mustard) obliterated the European trenches (Khatchadourian, 2012). Renamed Edgewood Arsenal in 1918, it was the first site in the USA to do human experiments with deadly warfare gases, becoming the largest chemical weapons facility worldwide in the 1940s (Albarelli, 2009).

[5] The prefix MK is used in projects run by the TSS (Kinzer, 2019). NAOMI was named after Dr. Abramson's assistant, Naomi Busner (Albarelli, 2009; Kuzmarov, 2020).

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According to Dr. Ferguson, one of the doctors who collaborated with Abramson was Harris Isbell, added by Gottlieb in the early 1950s. Isbell was director of research at the Addiction Research Center in Lexington, Kentucky, officially a hospital, but functioning more like a prison, co-administered by the Bureau of Prisons and the Public Health Service (Kinzer, 2019). Isbell, in association with Dr. Victor Vogel, performed investigations on imprisoned drug addicts to measure the chronic toxicity and tolerance of LSD in experiments, some of which involved dosing subjects with LSD daily for at least 30 days straight (Albarelli, 2009). Isbell received MKULTRA funding from Subproject 73, aimed at investigating the effects of drugs on susceptibility to hypnosis (Ross, 2006).

Dr. Louis Jolyon West, chairman of the Psychiatry Department at the University of Oklahoma, was also funded by MKULTRA to investigate the effects of certain drugs on susceptibility to hypnosis. It did that by means of Subproject 43 (1955), which showed special interest in possible dissociative states derived from the treatment under study (MKULTRA Subproject 43, 1955; Ross, 2006). In this subproject, the CIA invested $20,800, which, in addition to payments for a head researcher, a psychiatrist-physiologist, an experimental psychologist, and a research assistant, financed the creation of a special chamber equipped with a broad-spectrum polygraph, for simultaneous recording of a variety of psychophysiological responses from the subjects (Kinzer, 2019; MKULTRA Subproject 43, 1955; Ross, 2006). Apart from this work, West ran a clinic in the Haight-Ashbury district of San Francisco, where volunteers were given LSD and subsequently monitored for their reactions (Kinzer, 2019).

Gottlieb also incorporated into his research team Dr. Carl Pfeiffer, chairman of the Department of Pharmacology at Emory University (Atlanta, Georgia), later moving to the New Jersey Neuro-Psychiatric Institute; the doctor received funding for MKULTRA Subprojects 9, 26, 28, and 47, via which LSD and other drugs were given to prisoners at the US Penitentiary in Atlanta and to offenders at the juvenile detention center in Bordentown, New Jersey (Albarelli, 2009, Kinzer, 2019).

The connections of MKULTRA went beyond the US borders. In June 1953, Dr. Donald Ewen Cameron, chairman of the psychiatry department in McGill University and director of the Allan Memorial Institute in Montreal (Canada), created a procedure called psychic driving, to help patients identify significant issues associated with their mental problems (Cameron, 1956). The method consisted of continuously playing the same sentences considered relevant for each patient, from a tape recorder (Cameron, 1956). Cameron's investigation was funded by the CIA with MKULTRA's Subproject 68 (Lawrence, 1987; McCoy, 2006; Ross, 2006), and focused on how human behavior is affected by such repetition (with the experiments even sometimes lasting 16 hours a day for six or seven days), often with the help of substances such as LSD and curare, and treatments like intensive electroshocks, sensory isolation and induced continuous sleep (e.g., for seven-10 days) (MKULTRA Subproject 68, 1957). Cameron's initial objective of combining these procedures was to "depattern" the mind, dissolving the brain's paths to eliminate illness, so that physicians could "repattern" the patients' minds with psychic driving. Nevertheless, patients' memories were destroyed, leading them to childlike behavior, sometimes even forgetting basic skills such as personal hygiene, dressing themselves and tying shoelaces (Thompson, 2017).

Not only scientists and physicians contributed to MKULTRA's cause. After Harry Houdini died, one of his disciples, John Mulholland (real name, John Wickizer), became America's most famous magician (Kinzer, 2019). On April 13th, 1953, Gottlieb was in New York to meet Mulholland (a master of what he called the "psychology of deception") to convince him to teach CIA officers how to distract unwilling subjects' attention so that drugs could be administered to them without anyone realizing what was happening (Kinzer, 2019, p. 89). To expand upon the training sessions, Gottlieb also asked Mulholland to write a book on "sleight-on-hand practices", which he did, financed with MKULTRA Subprojects 4, 15, 19, and 34 (Ross, 2006). The result was the manual *Some Operational Applications of the Art of Deception*, its contents of which were leaked in 2007 (the only fully intact MKULTRA document known to still exist), eventually being published as *The Official CIA Manual of Trickery and Deception* (Kinzer, 2019). As was customary for Mulholland's CIA work, it was written as if it were for the stage, insisting that (contrary to the popular cliché) the hand is not quicker than the eye; the key to magic tricks is not to move the hand quickly, Mulholland said, but to distract attention from what the hand does (Kinzer, 2019).

"[C]hemists of the Eli Lilly Company […] have […] succeeded in breaking the secret formula held by Sandoz […] of Lysergic Acid and have manufactured for this Agency a large quantity […] which is available for our experimentation," reported TSS chemical division deputy chief Robert Lashbrook in a memorandum in the early 1950s (Albarelli, 2009, p. 153; Kinzer, 2019, p. 130). Thus, MKULTRA Subproject 6 (1953) was "[d]esigned to develop a reliable source of lysergic acid derivatives within the U.S. as opposed to our present complete dependence upon [*redacted word*] sources," (MKULTRA Subproject 6, 1953, p. 12). Later, via MKULTRA Subproject 18, the Eli Lilly Company was given a $400,000 grant to supply LSD to the CIA (Kinzer, 2019; Ross, 2006), which would be the costliest "subcontract" in the whole of MKULTRA's decade-long existence (Kinzer, 2019, p. 130).

Strange incidents

It is alleged that the most-recently known episode of an ergotism epidemic started on August 16th, 1951, in the Languedoc-Roussillion region of southern France, in a town situated on the Rhone River and founded in the fifth century C.E. called Pont-St.-Esprit (Albarelli, 2009, 2010; Fuller, 1968). There, an outbreak characterized by symptoms such as intestinal disorders, bradycardia, mydriasis, and sleeplessness, mixed with psychotic hallucinations spread, affecting nearly five hundred people and causing the deaths of at least seven (Albarelli, 2009, 2010; Fuller, 1968). Nearly thirty years later, Hofmann (1980) would deny any relationship between the outbreak and ergotism and would attribute the incident to poisoning produced by a mercury compound employed for disinfecting seed, reaffirming the official version. However, neither kidney damage (where the highest concentration of the mineral is found), nor mercury traces in the urine, nor the typical ashen color to the mouth were found in the patients (Fuller, 1968).

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The doctors who had worked at the bedside of the sick were convinced that the symptoms that they had encountered, analyzed, and appraised could only be attributed to ergotism caused by the consumption of bread (the tragedy being labeled *le pain maudit*) infected with a psychedelic mold (Fuller, 1968; Kinzer, 2019). The report by the practicing physicians to the French Academy of Medicine summarized the results from the laboratories in three points: "(1) many samples of the bread and flour […] had shown in laboratory tests to be highly toxic to animals; (2) no mineral poison had been detected; (3) ergot and unknown alkaloids had been discovered and clearly noted." (Fuller, 1968, p. 186-7).

Nevertheless, the millers blamed for the poisoning defended themselves by arguing that ergot would only be toxic in doses of at least four to 10 g, but bread infected with these doses would have a sickly smell, a repulsive taste, and a dark gray color, whereas the bread which supposedly caused the outbreak was tasty, and nobody who had eaten it expressed any evident indication of disgust (Fuller, 1968). "The poison of *le pain maudit* would have to have been practically colorless, tasteless, and incredibly powerful", so concentrated that "[e]ven a single mouthful of bread containing the tasteless poison would be capable of creating violent illness, and in some cases, death." (Fuller, 1968, p. 187).

On the night of November 28th, 1953, Dr. Frank R. Olson, a SOD biochemist at Fort Detrick involved in top-secret government experiments, jumped to his death from the thirteenth floor of the Statler Hotel in New York. This was nine days after he had been unwittingly drugged in a meeting after drinking Cointreau, which had been laced with a mixture of LSD and Meretran by the TSS chemical division deputy chief Robert Lashbrook, following the orders of his superior, Sidney Gottlieb (Albarelli, 2009; Kinzer, 2019; Senate, *Project MKULTRA*, 1977). In addition to Olson, the meeting comprised CIA/TSS officials (including Gottlieb and Lashbrook) and other scientists from the SOD such as Lt. Col. Vincent Ruwet, John C. Malinowski, Herbert Tanner, Lt. Col. Everett E. Champlin, and Benjamin Wilson, the latter three also being unwittingly spiked with LSD (Albarelli, 2009). The assembly had taken place at a remote[6] set of cabins at Deep Creek Lake, a wooded area in Western Maryland, where, in keeping with Camp Detrick security, the gathering had been disguised as a winter meeting of sports magazine writers and editors, and other professionals in this field (Albarelli, 2009).

"[H]ighly regarded by his colleagues both as a scientist and as a friend", Olson, who on May 6th, 1943 was transferred from Edgewood Arsenal to Camp Detrick, and in 1950 was promoted to chief of the plans and operations branch of the SOD, appeared dazed and distressed, uncharacteristically distant and uncommunicative with his family after the so-called LSD "experiment" (the label given to it in the eventual investigation) occurred (Albarelli, 2009, p. 116). Thus, he repeatedly told his wife that he had made "a terrible mistake", adding no more explanations (Albarelli, 2009, p. 171), and, early on Monday, November 23rd, three days after the end of the Deep Creek Lake meeting, he asked the SOD chief, Lt. Col. Ruwet, to dismiss him or let him resign because he considered that he had "[m]essed up the experiment and did not do well at the meetings," (Albarelli, 2009, p. 108).

Initially dissuaded from trying by Ruwet, Olson made a second attempt the next day, Tuesday 24th, which Ruwet reacted to by telling him that he thought that he should undergo psychiatric treatment, subsequently informing Sidney Gottlieb's deputy, Robert Lashbrook of the situation. After consulting his superior, Lashbrook stated that arrangements would be made to take Olson to New York to see Dr. Harold Abramson, who had a top-secret security clearance and Gottlieb's complete trust (Albarelli, 2009; Kinzer, 2019).

Thus, on that Tuesday at 2:30p.m., Olson, Ruwet, and Lashbrook boarded a flight to New York City, which was where Olson met Dr. Abramson at 5:00p.m. The three of them stayed at the Statler Hotel, where Abramson later visited to meet with Olson again, at 10:30p.m. The following day, Wednesday 25th, another meeting took place, but this time in Abramson's office, at 4:00p.m. On Thursday 26th, at 7:30a.m., Ruwet, Lashbrook, and Olson took a flight to Washington D.C. to have Thanksgiving dinner with their families. From the airport, Lashbrook set off at home whereas Ruwet and Olson were picked up by Malinowski. During the trip, Olson was able to talk with Ruwet privately, who called Lashbrook at home. Olson was taken to Lashbrook's apartment while the other two men went as far as Frederick. At 11:30a.m., Gottlieb arrived at Lashbrook's apartment, then at 12:00p.m. drove Lashbrook and Olson to Washington D.C. airport. From there, they returned to New York where the latter had a new consultation at Dr. Abramson's Long Island residence, at 4:00p.m. After the appointment, the physician took his guests to the nearby Cold Spring Harbor, where Olson and Lashbrook had Thanksgiving dinner and stayed overnight. Abramson drove them back the next day, Friday 27th, at 8:15a.m., to his New York City office for a new consultation. After that Olson and Lashbrook returned to the Statler Hotel, where nothing else of note happened. A little before 10:00p.m., Olson called his wife. At 2:25a.m. on Saturday 28th, according to his testimony, Lashbrook woke at the sound of a loud bang (Albarelli, 2009).

In June 1975, the Rockefeller Commission, created to investigate CIA irregularities, put a theory forward that Olson's death resulted from an adverse reaction to LSD. Olson's close family met with CIA director William Colby and President Gerald Ford, who issued a formal apology and awarded the family a $750,000 settlement. However, after the death of Olson's widow, Alice, their oldest child, Eric, had his father's body exhumed by pathologist Dr. James E. Starrs from Georgetown University, who found a hole in Olson's head that had come from the butt of a gun and not from a fall from a thirteenth-floor window (Kuzmarov, 2020). The autopsy also revealed a lack of cuts or lacerations, which meant that he could not have jumped from a closed window as a windowpane would have produced cuts on the body. The New York District Attorney subsequently changed the designation of Olson's death from "suicide" to "unknown" (Kinzer, 2019; Kuzmarov, 2020).

According to the American journalist and writer Hank P. Albarelli Jr. (2009, 2010), the Pont-St.-Esprit incident was in fact a top-secret, joint Army/CIA experiment, conducted as part of the Project

[6] From April 1951, CIA and SOD personnel started to make quarterly retreats of about three days together to one of several isolated locations (such as Deep Creek Lake and Lost River in West Virginia) to discuss project progress and future (Albarelli, 2009).

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MKNAOMI, under the code name Operation SPAN, which involved the spraying of a potent LSD mixture and the contamination of produce. Albarelli (2009) pointed out that Olson spoke about the experiment "out of security lines" (in violation of his security oath with both the Army and CIA) on at least two occasions, which according to the journalist was the "terrible mistake" that Olson had made, which he revealed again in his last days. The Deep Creek Lake meeting was a trap for Olson so that he could be drugged with LSD and interrogated about his true intentions (Albarelli, 2009). The consequences of that "experiment", however, were to make Olson reach a point of no return, from where only he could leave either by resigning (as he had requested to Ruwet), committing suicide, as the official version has maintained, or, as Albarelli (2009) stated, being murdered.

Taking Albarelli's (2009) statements as proof, the office of the head of the French intelligence agency DSGE (Directorate General for External Security), Erard Corbin de Mangoux, sent a confidential inquiry to the US State Department Bureau of Intelligence and Research, asking about how the US Government were involved in the 1951 incident in Pont-Saint-Esprit (Engdahl, 2010).

Other plants under study and the end of the project

The *Rivea corymbosa*, also known as *Ipomoea sidaefolia* Choisy (and, more popularly, morning glory and dondiego, among many other names), is a large woody vine with bell-shaped flowers, which in Mexico is called *ololiuhqui* and whose seeds are some of the most sacred hallucinogens for many Indian communities (see, for example, Schultes et al., 1992). MKULTRA Subproject 1 (1953) was funded to identify the alkaloids of the plant's seeds, which had never previously been researched (MKULTRA Subproject 1, 1953). The investigation was continued under Subprojects 6 (1953) and 22 (1954). MKULTRA Subproject 22 (1954) had the added function of studying the active principals of the *Amanita muscaria* and the *Rhynchosia phaseoloides*, the latter being investigated in Subproject 37 as well (Ross, 2006). The beans of several species of Rhynchosia may have been employed in ancient Mexico for their psychotropic properties, whereas Amanita could be man's oldest hallucinogen (Schultes et al., 1992). Other MKULTRA attempts to investigate hallucinogenic plants included Subprojects 51 and 52, funded to study ceremonial mushrooms (Ross, 2006), likely from the *Psilocybe* genre, and Subproject 58, which organized an expedition to pick them (Ross, 2006).

Richard M. Helms, one of the inventors of MKULTRA, followed John McCone as director of the CIA in 1966. Before he and Gottlieb resigned from their positions, they ordered that all the documents related to MKULTRA be destroyed, which led to a considerable loss of information on January 30th, 1973 (Hooper, 2012; Kinzer, 2019). On May 9th of the same year, in an attempt to regenerate the institution, the new director of the CIA, James Schlesinger, demanded the Agency's officers to report illegal acts (i.e., anything that might have been considered to be outside the legislative charter of the agency) that they had committed or were aware of, which gave rise to a thick loose-leaf book of 693 pages, known as the "Family Jewels" (Kinzer, 2019), and ultimately, to MKULTRA being uncovered (Hooper, 2012).

Conclusion

"[B]y 1961, 1962, it was at least proven to my satisfaction that brainwashing, […] some kind of an esoteric device where drugs or mind-altering kinds of conditions and so forth were used, did not exist," the CIA psychologist John Gittinger declared in 1977 to the Senate Select Committee on Intelligence (Senate, *Project MKULTRA*, 1977, p. 62). The conclusion that he and his Agency's colleagues drew was that "[b]rainwashing was largely a process of isolating a human being, keeping him out of contact, putting him under long stress in relationship to interviewing and interrogation, and that [CIA agents] could produce any change that way." He added that it should not be necessary to "resort to any kind of esoteric means."

As with the previous attempts, Project MKULTRA in its decade of operation was unable to consistently produce a truth serum (Kinzer, 2019). Finally, the plan to try to make truth drugs from substances such as scopolamine, cannabis, mescaline, and LSD was halted because they were too unsafe or unpredictable (e.g., Khatchadourian, 2012; Marks, 1979; McCoy, 2006, 2012). In the words of Albert Hofmann (1980, p. 26), the creator of the latter drug: "The danger of LSD lies not in its toxicity, but rather in the unpredictability of its psychic effects."

The substances that had been considered so promising as to represent "a new concept of war", and even to reach the point of there being conflicts "without casualties", have not only become useless "esoteric means", but also dangerous poisons. Among other drugs, mescaline and LSD were classified under Schedule I of the 1967 UN Convention on drugs, meaning that their medical use was not accepted and were considered likely to cause maximum harm (Rucker et al., 2017). Accordingly, in 1970, President Richard Nixon signed the Controlled Substances Act (CSA), which classified drugs into five schedules. Schedule I included the most dangerous and medically useless substances, such as marijuana, mescaline and LSD, these three still categorized as such (Kupferschmidt, 2014). By the time the CSA was passed, more than one thousand scientific articles, which included over 40,000 individuals, had been published on psychedelic medicine (Strauss et al., 2022), in addition to the printing of several dozen books and the organization of six international conferences (Albayrak, 2019). However, as a consequence of that ban, human hallucinogen research became virtually dormant from the 1970s until nearly the end of the century, a unique situation in the history of modern clinical pharmacology (Johnson et al., 2008).

This was despite the huge potential that they and other similar drugs, such as MDMA and psilocybin might offer (e.g., Kupferschmidt, 2014). Psilocybin, and even LSD (Hofman, 1980),[7] may be useful for reducing the anxiety and anguish of patients facing death, whereas MDMA is being investigated as a treatment for post-traumatic stress disorder (PTSD) (Kupferschmidt, 2014). Different medicines

[7] The doctors had already explained to Laura Huxley that Aldous Huxley would have convulsions and choking fits in the final stages of his throat cancer ordeal. He died serenely and peacefully, however. On the morning of his last day, by this time unable to speak, he wrote on a sheet of paper: "LSD—try it—intramuscular—100 mmg." His wife, who understood the message, ignored the misgivings of the physician and gave it to him (Hofmann, 1980, p. 176).

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derived from cannabis, such as Dronabinol and Nabiximols, have been developed to stimulate appetite in cases of anorexia associated with acquired immune deficiency syndrome (AIDS), and to reduce spasticity provoked by multiple sclerosis, respectively (Rucker et al., 2017). Even scientists, Silicon Valley executives, and others who face complex problems or operate at high performance levels are using microdoses of psychedelics (e.g., 10 µg of LSD or 100 mg of psilocybin), which do not produce sensory changes or debilitation of the subject, to heighten alertness, creativity, and problem-solving (Albayrak, 2019).

This so-called third-wave resurgence of psychedelics (Albayrak, 2019) is occurring at the same time as changes in the rigid prohibition of these drugs. On May 9th, 2019, Denver (Colorado) became the first town in the USA to pass an ordinance (the Denver Psilocybin Mushroom Initiative) to decriminalize hallucinogenic mushrooms (Chavez & Prior, 2019). Oakland, Santa Cruz, Seattle and four cities in Massachusetts shortly followed, whereas Oregon decriminalized psilocybin and legalized its use in psychotherapy in 2020, while Washington, D.C. did the same in 2021 with ayahuasca, mescaline and psychedelic mushrooms (Holloway, 2022).

Hence, "high hopes" (Kupferschmidt, 2014) can be raised about the advantages and opportunities that a respectful and conscientious employment of these psychoactive drugs may bring to therapy and research. A strict prohibition of these substances does not seem to be either rational or practical, unless there are ulterior motives to keep the ban in place. In the words of Louis Jolyon West, an MKULTRA collaborator, "[t]he total or partial prohibition of drugs gives government considerable power, because the mechanisms necessary for controlling drugs can provide leverage for other types of control." (West & Siegel, 1975, p. 298).

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