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Albert Hofmann — The Scientific Work

Catalogue of Works, Source Criticism, and Seven Re-Readings

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Abstract

This work treats Albert Hofmann (1906–2008) not as a figure of discovery but as a body of work: four decades of industrial research whose best-known single result — LSD-25 — is neither its largest nor its most consequential.

Three findings carry the re-reading. First, Hofmann's papers have been publicly accessible at the Institute of the History of Medicine, University of Bern, since 2014 and remain largely unexamined; the account given in *LSD: My Problem Child* (1979) can therefore be tested systematically against primary sources for the first time. Second, the evidential position on the 1978 Eleusis hypothesis shifted in 2026: an experimental study shows that toxic ergopeptides, treated with lye, convert into an equilibrium mixture of lysergic acid amide and iso-lysergic acid amide. Third, the chemotaxonomic anomaly raised by Hofmann's ololiuqui finding of 1960/63 was resolved only between 2004 and 2011, by the discovery that the ergolines of convolvulaceous plants originate in epibiotic fungi of the genus *Periglandula*.

Seven re-readings follow (Part C). Two of them — the ololiuqui anomaly as the earliest chemical detection of a symbiosis, and the Sandoz rye contract as a precursor of a disposal regime over living organisms — carry sub-papers of their own.

The synthesis (Part E) reads the work along the asymmetry between risk-bearing (ρ) and power of disposal (δ) per FORSCH-0083. That asymmetry is built into the subject matter: at every station of the chain from the rye field to the branded preparation, risk and disposal come apart, and they do so as a rule rather than by accident.

State of completion: v1.0 is scaffold, source criticism and thesis development. The publication list (Part B7) is incomplete and marked as an open task; the archival holdings have not been inspected. Both are named in Part F.

Part A — Why a Re-Reading Is Needed

A1 The State of the Record

The literature on Albert Hofmann is extensive and rests to a remarkable degree on a single source: his own account in *LSD: My Problem Child* (1979) and the interviews and anniversary pieces derived from it. The book is an autobiography, not a scientific report, and it was written thirty-six years after the event it places at its centre.

The consequence is visible. The reception knows a date (April 1943), a substance (LSD-25), a scene (the bicycle ride home) and a stance (concern for a misused child). It knows neither the 1929 dissertation nor the ergometrine work of the 1930s, neither *Die Mutterkornalkaloide* of 1964 nor the ololiuqui paper of 1963. A chemist who worked forty-two years in an industrial laboratory is reduced to five days in April 1943.

This is not merely a question of balance. It renders the work unreadable: detach LSD from ergot chemistry and you can explain neither why the substance was made in 1938, nor why it lay untouched for five years, nor why a pharmaceutical company distributed it to researchers worldwide free of charge.

A2 Three Shifts Since the Previous Version

Three things have changed relative to the state on which version v0.1 of this work was built.

First, access to the primary sources. Hofmann's papers were transferred to the Institute of the History of Medicine at the University of Bern in 2013 and have been accessible to researchers since 2014. The holdings comprise publications, manuscripts, and both professional and private correspondence; the material had already been ordered by the descendants and was re-catalogued in Bern. The transfer was made on condition that research be conducted with it. The historian working on the collection, Beat Bächli, noted in 2018 that only a few had engaged with it so far. Soberly stated, this is one of the best-catalogued and least-exploited primary sources in twentieth-century pharmaceutical history.

Second, the Eleusis question. The thesis advanced in 1978 by Wasson, Hofmann and Ruck — that ergot alkaloids were the active agent of the Eleusinian kykeon — was long regarded as chemically implausible: *Claviceps purpurea* in its natural state contains an alkaloid profile that is at best moderately psychoactive and carries unfavourable toxic side effects. A study published in *Scientific Reports* in 2026 addressed this objection experimentally.

Third, the resolution of the ololiuqui anomaly. Hofmann's finding that lysergic acid amides occur in morning glories contradicted the assumption that ergolines were confined to fungi of the Clavicipitaceae. The resolution came from symbiosis research between 2004 and 2011.

A3 Methodological Decision: Work Rather Than Legend

This study proceeds in three steps. Part B reconstructs the catalogue of works as far as is possible without archival access, and names precisely what is missing. Part C presents seven re-readings, each with a stated evidence grade. Part D treats the Eleusis complex separately, because it moved in 2026. Part E draws the synthesis.

Throughout: every statement carries a grade — **[G]** established, **[W]** probable, **[O]** open.

Where a datum must be checked against the original, **[V]** is appended. The source register carries the references.

One stipulation up front: synthetic procedures for controlled substances are not presented in this work. What is treated is structural elucidation, mode of action, the history of the work, and regulation. This restriction does not diminish the historical analysis, because what is historically interesting in Hofmann's work is not the reaction conditions but the logic of the experimental series and its institutional setting.

Part B — The Catalogue of Works

B1 Origins and Training (1906-1929)

Hofmann was born on 11 January 1906 in Baden, Canton Aargau, the eldest of four children. **[G]** His educational path was not a matter of course: after his father contracted tuberculosis the family fell into financial difficulty; Hofmann did not attend the Gymnasium but completed a commercial apprenticeship at Brown Boveri, finishing in 1922. Only funding by his godfather made possible attendance at the private Minerva school in Zurich and the school-leaving certificate in 1925. **[G]**

This detour deserves more than a biographical footnote. Hofmann entered science through a commercial training in an electrical engineering company, not through a humanist Gymnasium. A reception that files him as nature mystic and reader of Goethe passes over the fact that his first occupational socialisation was industrial — and that he then stayed forty-two years in an industrial laboratory, never seeking a university position.

In 1925 he began studying organic chemistry at the University of Zurich and took his doctorate in 1929 under Paul Karrer. **[G]** The dissertation is titled “Über den enzymatischen Abbau des Chitins und Chitosans”; from it came the first publication, Karrer & Hofmann, *Helvetica Chimica Acta* 12 (1929) 616-637. **[G]** Hofmann's entry into research was thus structural chemistry on a biopolymer, not alkaloid chemistry. The later capacity to isolate and assign individual components within complex natural-product mixtures was schooled here.

B2 Sandoz 1929-1971

Hofmann joined Sandoz in Basel in 1929. The stations: own laboratory from 1935, *Prokurist* in 1946, deputy director in 1952, assistant director in 1959, retirement in 1971. **[G]** He became head of the natural products department.

He was hired by Arthur Stoll, who had initiated ergot research at Sandoz in 1917 and isolated ergotamine in 1918. Hofmann was 23 and entered an already running programme as an assistant. **[G]** That Hofmann's later account grants Stoll strikingly little credit has been remarked upon in the revisionist literature. **[W]** See C5.

B3 The Ergot Line

Precursor. Before ergot came a different subject, for six years: cardiac glycosides. Eight papers with Hofmann appeared between 1933 and 1935 in the series “Mitteilung über Herzglucoside”, among them the isolation of scillaren A from squill. **[G]** The line ends in 1935 — the year Hofmann received his own laboratory. Details in Appendix W, section

5.2.

Ergot — the resting form of *Claviceps purpurea* on rye — was a raw material for Sandoz, not a curiosity. The isolation history of the alkaloids is dense: ergotamine 1918, ergometrine (ergobasine, ergonovine) 1935, ergosine 1936, ergocryptine 1937, ergocornine and ergostine 1943. [G]

Hofmann's contribution lies in structural elucidation and in partial syntheses based on lysergic acid. Products of this line:

Compound	Indication	Status
Ergotamine	migraine, uterine contraction	Stoll 1918, basis of the line
Ergometrine / methylegometrine	post-partum haemorrhage	Hofmann's partial synthesis; therapeutically his most consequential work
Dihydroergotamine (Dihydergot)	vascular	dihydrogenated series
Co-dergocrine (Hydergine)	cerebral circulation, geriatrics	commercially load-bearing

All share the tetracyclic ergoline skeleton; the naturally occurring ergolines are methylated at the nitrogen in position 6 and carry further substituents at position 8, the majority additionally a double bond between C9 and C10. [G] The pharmacological breadth of the group — uterotonic, vasoconstrictive, centrally active — follows from variation at that position on a constant skeleton. This is the chemical logic from which LSD-25 emerged: one further amide in a systematic series.

B4 The Lysergic Acid Series and LSD-25

In 1938, within a series of lysergic acid amides, Hofmann synthesised the diethylamide, which as the twenty-fifth member received the designation LSD-25. [G] The first publication is Stoll & Hofmann, "Partialsynthese von Alkaloiden vom Typus des Ergobasins" (6th communication on ergot alkaloids), *Helvetica Chimica Acta* 26 (3), 944–965 (1943). It presents LSD as one of several alkaloids of the ergobasine type and records its **oxytocic effect on the rabbit uterus in situ**. The psychic effect is not a topic there: LSD entered the literature as a candidate uterotonic. [G] The aim of the series was a circulatory stimulant. The substance did not stand out in pharmacological screening, and the series was discontinued. [G]

Five years later Hofmann resumed the work. On 16 April 1943 an unintended exposure occurred, possibly via the skin. [W] On 19 April the self-experiment followed, with 0.25 mg — an amount Hofmann chose as the smallest dose from which he expected any effect at all. [G] That this "smallest" dose is, by current standards, two to five times a customary active dose is the actual content of the event: no substance then known produced such an effect in such traces. [G]

An underrated methodological consequence follows. LSD forced pharmacology to take the microgram range seriously — analytically, dosimetrically and conceptually. The idea that quantities far below the detection limits of the time can be physiologically relevant entered the discipline with this substance.

From about 1949/50 Sandoz distributed LSD worldwide for research purposes under the trade name Delysid. [G] This mode of distribution — free supply to clinics and researchers, coupled with an invitation to physicians to try the substance themselves — is the mechanism that enabled both the psychiatric research wave and the later uncontrolled spread. It belongs in any account that aims beyond the figure of the discoverer.

B5 The Mexican Line

Psilocybin and psilocin. After R. Gordon Wasson publicised the Mazatec mushroom rituals and Roger Heim supplied the taxonomic determination, material reached Sandoz. In 1957/58 Hofmann isolated, named and synthesised psilocybin and psilocin; Sandoz marketed the preparation as Indocybin. **[G]**

Ololiuqui. Between 1960 and 1963 Hofmann examined the seeds of *Rivea (Turbinaria) corymbosa* and *Ipomoea violacea* — known in Mexican tradition as ololiuqui and badoh negro — and found lysergic acid amide (ergine) and related compounds. Publication: “Die Zauberdroge «Ololiuqui»”, *Planta Medica* 9 (1963) 354–367. **[G]** The significance of this finding is treated in Part C1.

Salvia divinorum. In 1962 Hofmann, together with Wasson, collected material of *Salvia divinorum* in the Sierra Mazateca. **[W]** The active compound salvinorin A was isolated only in 1982 and 1984 by other groups. **[V]** This case is frequently misattributed in the reception.

B6 The Books

Year	Title	Character
1964	<i>Die Mutterkornalkaloide</i>	scientific foundational work; reissue with updated preface and a new chapter on the history of LSD
1973	<i>The Botany and Chemistry of Hallucinogens</i> (with R. E. Schultes)	ethnopharmacological monograph
1978	<i>The Road to Eleusis</i> (with R. G. Wasson, C. A. P. Ruck)	interdisciplinary hypothesis
1979	<i>LSD: My Problem Child</i>	autobiography
1979	<i>Plants of the Gods</i> (with R. E. Schultes)	popular survey
1986	<i>Insight / Outlook</i>	essays in natural philosophy

The weighting of the reception is inversely proportional to the technical density of this list. *Die Mutterkornalkaloide* is the work in which Hofmann presents his own research; *LSD: My Problem Child* is the work that gets quoted.

B7 The Catalogue as an Open Task

No published complete catalogue of Albert Hofmann’s scientific papers exists.

[G] The reconstruction is begun in **Appendix W**: 113 records, of which 79 are numbers of the series “Mitteilung über Mutterkornalkaloide” and 44 of those carry Hofmann as author or co-author. Estimated total output: 130 to 170 papers. The following section describes the procedure applied there. His primary publications appeared predominantly in *Helvetica Chimica Acta*, the preferred publication organ of the Swiss chemical industry, together with contributions in *Experientia*, *Planta Medica* and the pharmacological literature, plus an unrecorded number of patent specifications.

Reconstruction requires:

1. systematic review of the annual indexes of *Helvetica Chimica Acta*, 1930–1975, by author name

2. database queries (Scopus, Web of Science, Lens.org) with reconciliation of name variants
3. patent search (Espacenet, Swissreg) by applicant Sandoz AG with inventor attribution
4. reconciliation against the publication list in the archival holdings

Step 4 is decisive, because a personal archive normally contains the list of works kept by the author himself. Until that reconciliation is done, any count (“over a hundred papers”) remains an estimate without evidence. This work therefore offers no such count.

Part C — Seven Re-Readings

C1 The Ololiuqui Anomaly as the Earliest Chemical Detection of a Symbiosis

Thesis. Hofmann’s ololiuqui finding of 1960/63 is filed in the reception as an ethnopharmacological curiosity. It is in fact the first chemical detection of a plant-fungus symbiosis — some fifty years before biology could describe the mechanism. **[W]**

The contradiction. Ergolines were held to be products of the Clavicipitaceae, that is, of fungi. Hofmann found them in Convolvulaceae, that is, in dicotyledonous flowering plants. This disjunct distribution contradicts the rule that identical or structurally related natural products occur in organisms sharing an evolutionary history. **[G]** For decades the field treated the problem under the heading of chemical convergence in secondary metabolism — as a case of independent multiple origin.

The resolution. In 2004 Kucht and co-workers showed that treating *Ipomoea asarifolia* with fungicides eliminates the ergoline alkaloids while leaving the plant’s volatile oil untouched — and that the loss coincides with the disappearance of fungal hyphae associated with secretory glands on the upper leaf surface. **[G]** In 2008 Markert and co-workers demonstrated biosynthesis and accumulation of the ergolines within a mutualistic association. **[G]** In 2011 Steiner, Leibner, Schardl, Leuchtmann and Leistner described the genus *Periglandula* with the species *P. ipomoeae* and *P. turbinae*. The fungi are epibiotic: hyphae penetrate neither epidermal cells nor stomata, yet stand in intimate association with the secretory glands. **[G]**

Why this changes the reading. Hofmann did not examine a plant with an unusual constituent. Without being able to know it, he measured the metabolic product of a fungus living on the leaf surface of a plant that stores those products. The analysis was correct; the attribution of the producer was systematically wrong — not through error, but because the relevant biology did not yet exist.

This is a textbook case for a problem in the theory of science: a finding can be analytically sound and interpretively inaccessible at the same time, when the explanatory discipline is not yet available. Chemistry could measure what symbiosis research would be able to place only four decades later.

→ Developed in FORSCH-PROV0462 ololiuqui-symbiose .

C2 The Sandoz Rye Contract as a Precursor Disposal Regime

Thesis. The contractual binding of ergot-growing farms to Sandoz is a precursor of the

property regime over living organisms, predating the patentability of such organisms. **[W]**

The facts. Ergot was not gathered but cultivated. Sandoz maintained its own rye breeding programme and inoculated the ears with the fungus deliberately. Farmers who supplied the raw material obtained the rye from the company estate and were permitted to use it exclusively for ergot cultivation for Sandoz. **[G]** Patents on living organisms did not exist at that time; the binding was contractual. **[G]**

The structure. What results is a constellation one would today describe as a plant-variety or licensing construction, without the corresponding legal institution existing:

- The farm bears the agricultural risk (weather, crop failure, labour).
- The biological resource remains at the company's disposal.
- Refinement and the entire value creation lie downstream.
- The supplier holds no share in the rights derived from the raw material.

This structure is precisely the subject of FORSCH-0083: risk-bearing and power of disposal come apart and are stabilised by a contractual instrument.

Reach. The finding holds beyond the individual case, because it shapes the whole chain: what begins at the rye field continues in the Delysid distribution (free to researchers, with manufacture and withdrawal at the producer's disposal) and in the Mexican holdings (knowledge held by communities, exploitation by companies and science).

→ Developed in FORSCH-PROV0463 `roggenvertrag-verfuegung`, isPartOf FORSCH-0083.

C3 The Serotonergic Turn

Thesis. The most consequential effect of LSD is not psychedelic but neurochemical: the substance is the reagent on which serotonergic psychiatry was built. **[G]**

The chain. In 1953 Twarog and Page demonstrated serotonin in brain tissue. **[G]** In the same period John Gaddum observed that LSD antagonises the action of 5-hydroxytryptamine in isolated tissues, and inferred a possible connection between the mental effects and that substance. **[G]** In 1954 Gaddum and Hameed published on 5-HT-antagonising drugs. **[G]**

Independently and at roughly the same time, Woolley and Shaw at the Rockefeller Institute formulated the general thesis: the pharmacological findings indicated that serotonin has an important role in mental processes and that suppression of its action results in a mental disorder. **[G]** They described LSD as a serotonin antimetabolite.

In 1955 Aurelio Cerletti and Ernst Rothlin joined in *Nature* — both from Sandoz pharmacology. **[G]** The company that had made the substance took part in formulating the hypothesis that followed from it.

Why this shifts the weighting. From this constellation grows the idea that mental states are coupled to identifiable transmitter systems — the founding assumption on which all later psychopharmacology, including the SSRI era, rests. It was developed on a substance remembered publicly only as an intoxicant.

Two qualifications belong here. First, the original direction of the hypothesis was wrong: Woolley and Shaw posited a serotonin deficiency as cause; the current position describes the classical hallucinogens as 5-HT_{2A} agonists, not antagonists. **[G]** Second, the serotonin hypothesis of depression has long been contested in its simple form. The historical thesis is untouched by this: the object is not the correctness of the early assumption but its paradigm-forming effect.

C4 Methergine Rather Than LSD

Thesis. Measured by health benefit, methylergometrine is the most important product of the Hofmann line; measured by recognition it appears nowhere. [W]

Post-partum haemorrhage is among the leading causes of maternal mortality worldwide. Uterotonics of the ergometrine group are a standard means of its treatment and prophylaxis. Methylergometrine was added to the WHO Model List of Essential Medicines in 2021 (TRS 1035), indication post-partum haemorrhage; ergometrine is listed as therapeutically equivalent. [G] The listing is therefore more recent than the customary talk of a standard agent suggests.

The point of interest here is economic: the ergot line was a load-bearing business for Sandoz. It financed a natural-products department in which an experimental series could lie dormant for five years without being terminated, and in which a chemist had the means to examine Mexican mushroom and seed samples of modest commercial prospect. Without the revenue side of the ergot line there would have been no ethnopharmacology at Sandoz. [W]

One qualification belongs here: product patents for Methergine, Dihydergot or Hydergine naming Hofmann as inventor cannot be found. [O] Eleven patents naming him are documented — among them LSD (US 2,438,259) and psilocybin (US 3,075,992, US 3,183,172) — but not the commercially load-bearing ones. For the p/6 reading in Part E this is directly on point: disposal over the protective right lies with the company, not with the chemist. Details in Appendix W, section 7.

C5 Source Criticism of the Founding Narrative

Thesis. The canonical account of April 1943 is an autobiography written thirty-six years later and is to be treated as such. [G]

Three levels are testable. First, the contemporaneous documents: the laboratory journal entry and the report to Arthur Stoll of 22 April 1943. [V] Both lie in the company archive; partial reproductions are published. The report describes an intoxicant-like state with stimulated imagination, images of high plasticity and intense play of colour with the eyes closed, subsiding after about two hours. [G] This is more sober and shorter than the later narrative.

Second, the role of Arthur Stoll. Stoll had begun ergot research at Sandoz in 1917, isolated ergotamine in 1918, and hired Hofmann in 1929. It has been noted in the literature that Hofmann grants him little acknowledgement in his account. [W] Whether this traces to a conflict, to Stoll's initial scepticism about the reported dose, or to the narrative economy of autobiography cannot be settled without the correspondence in the archive. [O]

Third, the narrative form itself. The bicycle ride has become a ritual date since the 1980s; in the laboratory journal it stands as a marginal note. The distance between note and ritual is a research object in its own right. [W]

To be clear: there is no indication of invention. There are indications of compression, omission and retrospective sense-making — the normal form of autobiographical transmission, conspicuous in Hofmann's case only because it has barely been examined.

C6 Huautla — Asymmetry of Extraction

Thesis. The chain from Mazatec ritual practice to the Sandoz preparation Indocybin is a case in which risk-bearers and holders of disposal come apart completely. [G]

The structure: a community holds transmitted knowledge and a practice. An outside researcher is admitted to it and publishes. The publication makes the place the target of an influx that damages the local practice. The material reaches a pharmaceutical company, which isolates, names, synthesises and markets the active compound as a branded preparation. The downstream costs accrue to the community; the exploitation rights arise elsewhere.

Hofmann's position in this chain is that of the chemist at the end: he neither published nor triggered the influx. This exonerates him individually and changes nothing about the structure. The analytical yield lies precisely in the fact that the asymmetry arises without individual misconduct — it is a property of the arrangement, not of the participants.

For the present this is the most connectable point in the entire body of work: the question of who receives the returns of the current psychedelic research wave has its historical precedent here.

C7 The Self-Experiment as Method

Thesis. Hofmann stands in an identifiable methodological tradition, and his position within it is ambivalent. [W]

The line runs from nineteenth-century physiological self-observation through Louis Lewin's systematics of intoxicants and Kurt Beringer's *Der Meskalinrausch* (1927) to Hofmann, and from there into literature — to Ernst Jünger, with whom Hofmann maintained a close friendship and whose *Besuch auf Godenholm* (1952) draws on shared experience, and to Rudolf Gelpke, the Basel Islamicist whose *Vom Rausch im Orient und Okzident* (1966) carries the subject into cultural history. [G]

The methodological question is not whether the self-experiment was permissible but what it achieves epistemically. It supplies the only data source for an effect that no animal model can represent — and it supplies it under conditions that exclude any blinding and make the observer the instrument. The present discussion of functional unblinding in psychedelic trials is a direct continuation of this problem. [W]

Part D — Eleusis After 2026

D1 The Thesis of 1978

In *The Road to Eleusis*, Wasson, Hofmann and Ruck proposed that the kykeon — the sacramental drink of the Eleusinian Mysteries — contained ergot alkaloids from *Claviceps purpurea*. [G] The division of labour: Wasson supplied the ethnomycological hypothesis, Ruck the classical philology, Hofmann the chemistry.

D2 The Objections

The principal objection is chemical. *Claviceps purpurea* in its natural state contains an alkaloid profile that is at best moderately psychoactive and brings unfavourable toxic side effects — the ergopeptides are responsible for St Anthony's fire. [G] A procedure separating the active amides from the toxic peptide alkaloids must have been available to the priestesses, and no such procedure had been shown.

Alternative proposals were examined and largely rejected: the known variability of the

alkaloid profile with host plant and growth conditions does not, in the assessment of the specialist discussion, settle the question; *Claviceps paspali* would be the more plausible candidate on the basis of its alkaloid content, but has been ruled out. **[G]**

The second objection is archaeological: no ergot residues were demonstrated in the vessels from Eleusis. **[G]** To this belongs, however, the observation that a systematic, authorised search at the site appears never to have been conducted. **[W]** A non-finding without an investigation is not a negative finding.

D3 The 2026 Result

A study published in *Scientific Reports* in 2026 addressed the principal chemical objection experimentally: Antonopoulos, Dadiotis, Magiatis et al., *Scientific Reports* 16, 8757 (13 Feb 2026), DOI 10.1038/s41598-026-39568-3. **[G]**

Setup: pulverised sclerotia were refluxed in lye solutions and, as control, in distilled water. After liquid-liquid extraction, analysis was by ¹H NMR and UHPLC/Q-TOF-HRMS.

Result: in the preparations treated with lye at pH 12.5 (5% w/v), the signals characteristic of ergopeptides were no longer detectable at any reaction time, whereas they appeared in the controls; signals for lysergic acid amide derivatives appeared instead. Each preparation yielded an equilibrium mixture of LSA and iso-LSA; the reported yield is 0.54 mg LSA and 0.48 mg iso-LSA per gram of ergot. **[G]**

The authors state explicitly that the purpose was not to establish an analytical method, to optimise the hydrolysis conditions, or to re-evaluate the pharmacology, but to demonstrate that the transformation is feasible within the historical-technological context under investigation. **[G]**

Assessment. This does not show that Eleusis proceeded in this way. It shows that the principal objection to feasibility no longer holds: lye treatment was a technique available in antiquity, and it converts the toxic into the psychoactive profile. The status of the thesis thereby moves from “chemically implausible” to “chemically feasible, historically unevicenced”. **[G]**

D4 What Remains Open

Question	Status
Was a lye procedure used at Eleusis?	[O] — no direct evidence
Are there residues in vessels from the site itself?	[O] — systematic investigation outstanding
Does the Mas Castellar de Pontós finding hold?	[W] — it rests on two short contributions by Juan-Tresserras in Pons (ed.) 2002 and is explicitly contested by Guerra Doce & López Sáez 2006; no re-analysis exists and the analytical method is not named [O] . See Appendix W, section 5.6
Is the effect of an LSA/iso-LSA equilibrium sufficient?	[O]
Is the reception distorted by popular treatments?	[W]

For this work the result is relevant in two respects. Substantively it requires the Eleusis chapter to be rewritten relative to any account written before 2026. In terms of the body of work, it shows that Hofmann’s last major hypothesis — he was seventy-two in 1978 — entered experimental testability forty-eight years after its formulation.

Part E — Synthesis: Risk and Disposal in Hofmann's Work

The work can be read as a chain of stations at each of which one asks: who bears the risk (ρ), and who holds the power of disposal (δ)?

Station	Risk-bearer ρ	Holder of disposal δ	Asymmetry
Rye cultivation / ergot growing	farm: weather, crop failure, labour	Sandoz: seed, use restriction, offtake	complete
Laboratory / self-experiment	Hofmann personally, bodily	Sandoz: publication, patent, marketing	high
Clinical testing of Delysid	patients, investigators	Sandoz: supply, indication frame, withdrawal 1966	high
Mazatec transmission	community at Huautla: social downstream costs	publishers, taxonomy, pharmaceutical company	complete
Ololiuqui finding	— (no personal risk)	scientific exploitation	low
Prohibition and research moratorium	researchers, patients: option withdrawn	legislators, international conventions	high
Current research wave	trial participants, public funding	companies, patent holders	open, in motion

Two observations.

First, the asymmetry is regular, not anecdotal. It appears at every station, in different legal forms — contract, employment, publication right, trade mark, criminal law — and with different participants each time. This argues against an explanation via individual behaviour and in favour of a structural one.

Second, Hofmann changes sides. In the self-experiment he is a risk-bearer without disposal: the substance he tests in his own body belongs to his employer. In the Mexican line he is on the disposal side. This double position makes him a serviceable case for the ρ/δ model, because it shows in a single person that position depends not on attributes but on placement in the chain.

Prohibition from 1966/1971 is, within this frame, not a caesura but a redistribution: disposal moves from the manufacturer to the legislature, risk from the investigators to an unregulated market. Hofmann's own reading — a problem child that fell into the wrong hands — is the personalising variant of the same process.

Part F — Limits of This Version

This version is expressly incomplete. What is missing:

1. **The archival holdings have not been inspected.** All statements on the correspondence, on the Stoll question and on the wording of the rye contract stand under this reservation. The signature is **N 65**, Institute of the History of Medicine,

- University of Bern; no separately published finding aid exists, the holding is recorded in the institute's archive database.
2. **The publication list is begun, not finished.** Appendix W carries 113 records. Series numbers 1, 41, 53 and 75–79 remain open, as do the 54/55 numbering conflict, five unverified titles, and 43 entries resting on secondary records alone.
 3. **The patent position is partly worked.** Eleven patents naming Hofmann as inventor are documented; a total count across all national families is missing, as are the product patents for Methergine, Dihydergot and Hydergine.
 4. **Secondary literature in other languages** beyond the German- and English-speaking sphere is not covered; in particular, Mexican research on the Mazatec tradition is absent although it bears directly on C6. The same holds for the Catalan excavation literature bearing on Part D.
 5. **Petersen 2025** is evaluated through its table of contents, abstract and reference list, not its full text; chapter 10 is paywalled. **Bächi 2023** remains recorded bibliographically only.
 6. **Individual datings** are marked **[V]** and are to be checked against the originals; the list is in the source register.

Planned for v1.2: series review against the printed volumes for the 43 **W** entries, request for the list of works from N 65, full text of Petersen chapter 10, Espacenet count.

Glossary

Term	Explanation
Ergoline	tetracyclic skeleton of the ergot alkaloids
Ergopeptide	alkaloid subgroup with a peptide moiety; responsible for the toxic effects of ergot
Ergotism / St Anthony's fire	poisoning by ergot-infected grain; convulsions and circulatory damage up to loss of limbs
LSA / ergine	lysergic acid amide; demonstrated in convolvulaceous seeds
Epibiont	organism living on the surface of another without penetrating its cells
Sclerotium	resting form of the fungus; ergot in the literal sense
Symbiotum	unit of host plant and associated fungus, regarded as a functional whole
Kykeon	sacramental drink of the Eleusinian Mysteries
Entheogen	term coined by C. A. P. Ruck for ritually used psychoactive substances
p/δ asymmetry	divergence of risk-bearing (p) and power of disposal (δ); master theorem FORSCH-0083

Figures

Fig. 1 Chain of disposal: ergot to branded preparation

Risk-bearing and power of disposal at seven stations of the work (FORSCH-0331, Part E; instance of FORSCH-0083)

Station	Risk-bearer ρ	Holder of disposal δ	Asymmetry
Rye cultivation and ergot growing	Farm: weather, crop failure, labour	Sandoz: seed, use restriction, offtake	complete
Laboratory and self-experiment	Hofmann personally, bodily	Sandoz: publication, patent, marketing	high
Clinical testing of Delysid	Patients and investigators	Sandoz: supply, indication frame, withdrawal 1966	high
Mazatec transmission	Community at Huautla: social downstream costs	Publishers, taxonomy, pharmaceutical company	complete
Olioliuqui finding	no personal risk	scientific exploitation	low
Prohibition and research moratorium	Researchers and patients: option withdrawn	Legislators, international conventions	high
Current research wave	Trial participants, public funding	Companies, patent holders	open

Reading: the wider the gap between ρ and δ , the further the decision on continuation sits from those who bear the consequences.

Fig. 1 — Chain of disposal: ergot to branded preparation. The seven stations from Part E with assignment of risk-bearing (ρ) and power of disposal (δ). Source file: `abb/abb1_verfuegungskette_en.svg` .

Fig. 2 Lines of work, Albert Hofmann, 1925 to 1978

Five lines of work. The cardiac glycosides precede ergot and end in 1935; the lysergic acid series is a branch of the ergot line, not an independent beginning.

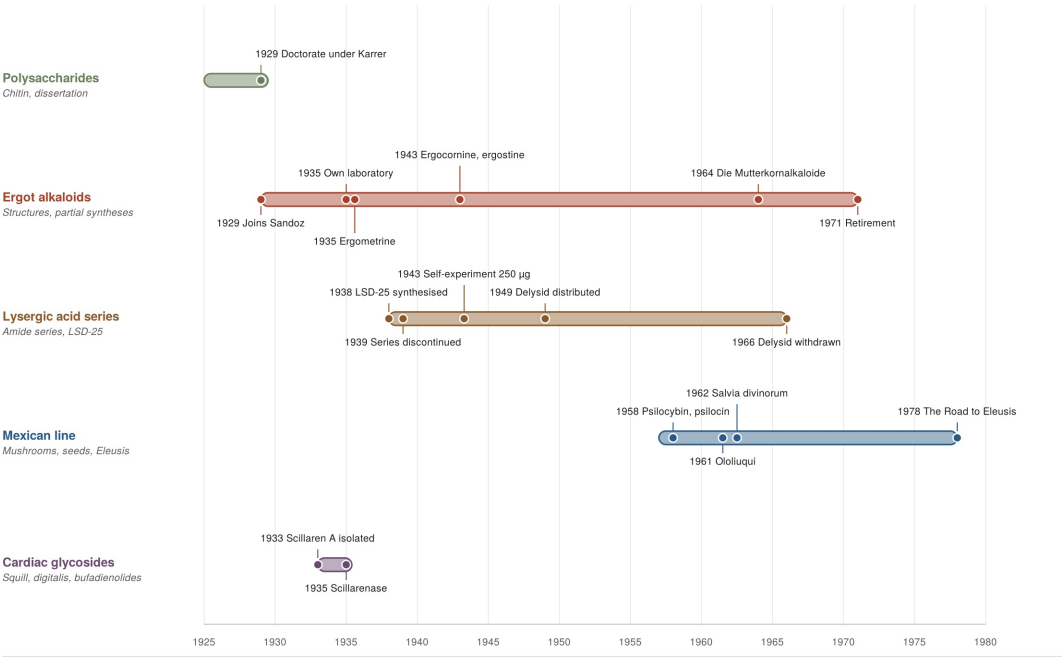


Fig. 2 — Lines of work, 1925 to 1978. Timeline of the five lines: polysaccharides, ergot alkaloids, lysergic acid series, Mexican line, cardiac glycosides. The cardiac-glycoside line runs 1933 to 1935 and ends in the year the ergot line begins. Source file: `abb/abb2_werklinien_en.svg` .

Sources

probable, **[O]** open, **[V]** to be verified against the original.

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