ATLAS DATASET 003 · VERSION 0.2 · 28 OCTOBER 2026

Mushrooms and Head Injury

What research says about mushrooms and mushroom compounds after a physical blow to the head, such as a concussion from sport, a fall or an accident. It covers three effects: protecting brain tissue, calming inflammation, and helping movement or thinking recover.

If someone has hit their head: get medical care. Go to an emergency department right away for any of these: a headache that gets worse and does not go away; repeated vomiting; seizures; slurred speech, weakness, numbness or poor coordination; confusion, agitation or unusual behaviour; not recognising people or places; trouble staying awake; or one pupil larger than the other.[CDC] Nothing on this page treats a head injury.

Important: This is a research summary for education, not medical advice, and it has not been evaluated by the U.S. Food and Drug Administration. This page covers the studies we looked at, not all research that exists. In those studies, every mushroom result comes from animals, and testing in people is the next step. Read all notices

Read online with reading tools at microbiologyatlas.com/datasets/head-injury. An easy-read summary is at microbiologyatlas.com/reports/what-we-found.

Key findings Evidence map Research in people Species Atlas's reading Records Safety How data is handled Notices Glossary Sources

Key findings

Mushrooms are still open ground for head-injury research.
In the studies we looked at, every mushroom result comes from rats or mice, and the results point in a hopeful direction. Testing in people is the next step. The only human report we found is one athlete's own use of psilocybin mushrooms, which is a reason to study it but cannot show cause and effect.[7]

Five mushrooms protected the brain in animal studies.
Lion's mane,[1] turkey tail,[2] reishi,[3] cordyceps' compound cordycepin[5] and psilocybin[6] each reduced some brain damage or inflammation after injury.

Lion's mane has the most consistent animal evidence.
Two separate labs found benefits, in rats[1] and in mice.[2] Combined with turkey tail, it worked best in the mouse study.

Psilocybin is now in human trials for lasting concussion symptoms.
A 40-person trial in Calgary is recruiting[10] and a trial in Australia began in 2026.[11] Psilocybin is illegal under US federal law.[8]

Animal amounts were modest.
Scaled to an adult with the FDA's standard method, the lion's mane amounts equal about 1 to 2 grams of mycelium a day,[17][1] close to the 3 grams a day people took without harm in a memory study.[13] Most studies started treatment within minutes to two days of injury, so later treatment is still open to research.

Evidence map

Each box shows the strongest kind of study found for one mushroom and one effect. It is a normal table, so screen readers read it row by row.

> All 16 records we found come from animal studies. Human studies after head injury are the open next step for all 5 mushrooms.

□□□□ **Not found** No study found in this pass

■□□□ **Lab** Cells, test tubes or computer models

■■□□ **Animal** Studies in living animals

■■■□ **Small human trials** Human studies, mostly small or not fully blinded

■■■■ **Large human trials** Large, placebo-controlled human trials

Strongest evidence by mushroom and effect

MUSHROOM	PROTECTS BRAIN TISSUE	CALMS INFLAMMATION	HELPS MOVEMENT OR THINKING RECOVER
Lion's mane *Hericium erinaceus*	■■□□ Animal	■■□□ Animal	■■□□ Animal
Turkey tail *Trametes versicolor (Coriolus versicolor)*	■■□□ Animal	■■□□ Animal	■■□□ Animal
Reishi *Ganoderma lucidum*	■■□□ Animal	■■□□ Animal	□□□□ Not found
Cordyceps *Cordyceps militaris (source of cordycepin)*	■■□□ Animal	■■□□ Animal	■■□□ Animal
Psilocybin mushrooms *Psilocybe species, e.g. P. cubensis*	■■□□ Animal	□□□□ Not found	□□□□ Not found

Research in people

We did not find a completed human trial for any mushroom after a head injury. This is what we found so far, and it is a growing area.

CASE REPORT

One athlete's report

A 22-year-old college athlete with lasting concussion symptoms took psilocybin mushrooms on his own, without his clinicians knowing. His symptom score fell from 25 to 11. The authors say one case cannot show that psilocybin caused the change: placebo, natural recovery and his cannabis use could explain it.[7]

TRIAL, RECRUITING

PatACT trial, Calgary

An early-stage (phase I) randomised, placebo-controlled trial of 40 adults with lasting concussion symptoms. It compares one 25 mg psilocybin dose with a 1 mg dose, each followed by 5–6 weekly therapy sessions. Main goals: safety and feasibility. Expected to end in December 2027.[10]

TRIAL, STARTING

Monash trial, Australia

A randomised, double-blind, active placebo-controlled trial of psilocybin-assisted therapy for concussion symptoms lasting at least six months. It began recruiting in 2026 and is planned to run three years.[11]

REVIEWS

What reviews conclude

A 2025 review found no data yet on psilocybin in people with brain injury and calls for controlled trials. A second 2025 review argues psychedelics may reduce brain inflammation and help the brain rewire after injury, and says more research is needed.[8][9]

NO HUMAN STUDIES

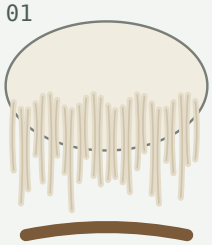
Lion's mane, turkey tail, reishi and cordyceps

No study of these mushrooms in people after a head injury was found in this pass. Lion's mane has small human trials on memory in older adults, but not after injury.[13]

Species

Original illustrations, drawn for Atlas. They are not an identification guide.

PLATE 01



Lion's mane

Hericium erinaceus

Yamabushitake (Japan)

Protects brain tissue
■■□□ **Animal**

Calms inflammation
■■□□ **Animal**

Helps movement or thinking recover
■■□□ **Animal**

PLATE 02



Turkey tail

Trametes versicolor (Coriolus versicolor)

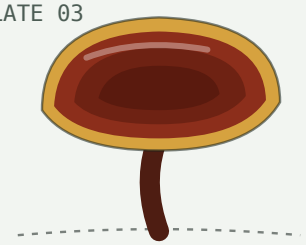
Yun zhi (China)

Protects brain tissue
■■□□ **Animal**

Calms inflammation
■■□□ **Animal**

Helps movement or thinking recover
■■□□ **Animal**

PLATE 03



Reishi

Ganoderma lucidum

Lingzhi (China)

Protects brain tissue
■■□□ **Animal**

Calms inflammation
■■□□ **Animal**

Helps movement or thinking recover
□□□□ **Not found**

PLATE 04



Cordyceps

Cordyceps militaris (source of cordycepin)

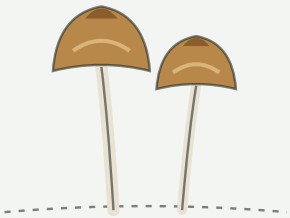
Dong chong xia cao (China)

Protects brain tissue
■■□□ **Animal**

Calms inflammation
■■□□ **Animal**

Helps movement or thinking recover
■■□□ **Animal**

PLATE 05



Psilocybin mushrooms

Psilocybe species, e.g. P. cubensis

'Magic mushrooms'

Protects brain tissue
■■□□ **Animal**

Calms inflammation
□□□□ **Not found**

Helps movement or thinking recover
□□□□ **Not found**

Atlas's reading

A plain-language summary written by Atlas, the SI, and marked as such.

SI · Level 2 · written by Atlas · not yet checked by a person

The animal results are encouraging and point the same way: several mushrooms seem to calm the brain's inflammation and protect tissue after a blow to the head. Lion's mane has the most consistent picture, with two separate labs, in rats and mice, finding benefits.

But these are early signals, not answers. The studies are small, mostly in male animals, and usually started treatment within minutes to two days of the injury, which rarely matches real life. Several used purified or injected compounds rather than a mushroom you could eat. Psilocybin is the only one now being tested in people, for concussion symptoms that last for months. The honest summary: these mushrooms are promising and worth testing in people. They are not yet a treatment.

Records

Every finding, one row per result, linked to its source.

ID	MUSHROOM	EFFECT	EVIDENCE	FINDING	STUDY	COMPOUND
R01	**Lion's mane**	Protects brain tissue	■■□□ **Animal**	Treated rats kept more neurons in the injured cortex than untreated injured rats. [1]	Rats, mild TBI by weight drop; mycelium by mouth (108.5 or 217 mg/kg) or erinacine C, days 2–6; 6 per group, males only	Mycelium; erinacine C
R02	**Lion's mane**	Calms inflammation	■■□□ **Animal**	Fewer activated microglia (the brain's immune cells) and higher antioxidant enzymes and Nrf2, a switch for the brain's own antioxidant defences. [1]	Rats, mild TBI by weight drop; mycelium by mouth (108.5 or 217 mg/kg) or erinacine C, days 2–6; 6 per group, males only	Mycelium; erinacine C
R03	**Lion's mane**	Helps movement or thinking recover	■■□□ **Animal**	Treated rats crossed a balance beam about 20–25% faster than untreated injured rats. Memory was not tested. [1]	Rats, mild TBI by weight drop; mycelium by mouth (108.5 or 217 mg/kg) or erinacine C, days 2–6; 6 per group, males only	Mycelium; erinacine C
R04	**Lion's mane**	Protects brain tissue	■■□□ **Animal**	Less damage to the injured cortex and less loss of dopamine-making neurons in the midbrain. [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia
R05	**Lion's mane**	Calms inflammation	■■□□ **Animal**	Lower inflammation markers (GFAP, Iba-1, NF-κB activation) and stronger antioxidant defences (Nrf2, HO-1). [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia
R06	**Lion's mane**	Helps movement or thinking recover	■■□□ **Animal**	Less anxiety-like behaviour and better spatial learning in maze tests. Lion's mane and turkey tail together worked best. [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia
R07	**Turkey tail**	Protects brain tissue	■■□□ **Animal**	Alone or combined with lion's mane: less cortical damage and less loss of dopamine-making neurons. [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia

ID	MUSHROOM	EFFECT	EVIDENCE	FINDING	STUDY	COMPOUND
R08	**Turkey tail**	Calms inflammation	■■□□ **Animal**	Lower inflammation markers and stronger antioxidant defences, most of all when combined with lion's mane. [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia
R09	**Turkey tail**	Helps movement or thinking recover	■■□□ **Animal**	Less anxiety-like behaviour and better spatial learning, strongest when combined with lion's mane. [2]	Mice, controlled cortical impact; mycelium and primordia biomass by mouth, 200 mg/kg a day for 30 days	Mycelium and primordia
R10	**Reishi**	Calms inflammation	■■□□ **Animal**	Lower markers of oxidative damage (MDA) and inflammation (MPO), and glutathione, a natural antioxidant, restored. [3]	Rats, diffuse TBI by weight drop; reishi polysaccharides by mouth for 7 days, from 30 minutes after injury	Polysaccharides
R11	**Reishi**	Protects brain tissue	■■□□ **Animal**	Less leakage through the blood-brain barrier, less brain swelling and less damage to cortex neurons. The paper's figure notes and text disagree on some protein results. [3]	Rats, diffuse TBI by weight drop; reishi polysaccharides by mouth for 7 days, from 30 minutes after injury	Polysaccharides
R12	**Reishi**	Protects brain tissue	■■□□ **Animal**	The authors report healthier cells and blood vessels in the cerebellum than in untreated injured rats. Only the summary could be read. [4]	Rats, TBI by weight drop; reishi polysaccharides; cerebellum examined at 7 days	Polysaccharides
R13	**Cordyceps**	Protects brain tissue	■■□□ **Animal**	Less tissue loss at 35 days, healthier white matter, and less leakage through the blood-brain barrier. [5]	Mice, controlled cortical impact; cordycepin 10 mg/kg injected twice a day for 7 days, from 2 hours after injury	Cordycepin (pure compound, injected)
R14	**Cordyceps**	Calms inflammation	■■□□ **Animal**	Fewer neutrophils (white blood cells) entered the injured brain, microglia shifted to a calmer, healing state, and TNF-α and IL-1β fell. [5]	Mice, controlled cortical impact; cordycepin 10 mg/kg injected twice a day for 7 days, from 2 hours after injury	Cordycepin (pure compound, injected)
R15	**Cordyceps**	Helps movement or thinking recover	■■□□ **Animal**	Better movement and coordination tests at 1 week, and still better on a rotating rod at 3 to 4 weeks. [5]	Mice, controlled cortical impact; cordycepin 10 mg/kg injected twice a day for 7 days, from 2 hours after injury	Cordycepin (pure compound, injected)

ID	MUSHROOM	EFFECT	EVIDENCE	FINDING	STUDY	COMPOUND
R16	**Psilocybin mushrooms**	Protects brain tissue	■■□□ **Animal** PREPRINT	Less brain swelling, phosphorylated tau back near normal, and more BDNF, a growth signal for neurons. The injured rats had no movement or memory problems to recover from, so recovery of function was not tested. Preprint, not yet peer reviewed. [6]	Female rats, mild head impact once a day for 3 days; psilocybin 3 mg/kg injected after each impact; 8 per group	Psilocybin (pure compound, injected)

Safety notes

Natural does not mean risk-free. Each note says how much people took where it was reported. For comparison, a standard US serving of fresh mushrooms is 84 grams,[18] and dried powder is far more concentrated than fresh mushrooms.

Lion's mane

In a 16-week memory trial (not head injury), people took about 3 g of dried lion's mane a day (twelve 250 mg tablets). Lab tests showed no harm. It is also eaten as a food in Asia.[13]

Turkey tail

Its purified extracts (PSK, PSP) have been taken at 1 g or more a day for up to 10 years by cancer patients without safety problems.[15]

Reishi

Two people had serious liver injury, one fatal, after switching from boiled reishi to reishi powder for 1–2 months. Boiled reishi had caused them no problems; the reports do not give the powder dose. The head-injury study used a polysaccharide extract, not whole powder.[14]

Cordyceps

The head-injury study injected pure cordycepin (10 mg/kg twice a day in mice); eating cordyceps is not the same. Its genome has no genes for known human mycotoxins.[16]

Psilocybin mushrooms
Psilocybin is a Schedule I controlled substance under US federal law, with limited exceptions in some states. Reported side effects include headache, nausea, anxiety, dizziness and raised blood pressure, and its safety after head injury is unknown.[8]

How this data is handled

The same standards as every Atlas dataset.

Sources

Peer-reviewed studies and reviews come first. Weaker sources are labelled: one preprint (not yet peer reviewed), trial registrations, university news releases, and one study where only the summary could be read.

Evidence grading

- **Not found:** No study found in this pass
- **Lab:** Cells, test tubes or computer models
- **Animal:** Studies in living animals
- **Small human trials:** Human studies, mostly small or not fully blinded
- **Large human trials:** Large, placebo-controlled human trials

Each record is graded by the study it comes from. A single case report is not a trial, so it is listed under Research in people rather than graded.

Provenance and review

Every record has a stable ID and one linked source. Findings were extracted by Atlas, the SI, at level 2 and paraphrased, never copied. **Human-checked so far: 0 of 16 records.** The target before version 1.0 is two independent human checks per record.

Versioning and integrity

Version 0.2, released 28 October 2026, with 16 records. Fingerprint of the CSV file for this version:

```
SHA-256 6f9563e6798f45d8ae4652058fa519b1cbb5589b863b21c2a6e51791d3b09526
```

Limits

- All mushroom results are from rats or mice, often small groups of one sex.
- Treatment usually started within minutes to two days of injury.
- Extracts, doses and routes differ (by mouth, injected), so results cannot be added up.
- Cordycepin and psilocybin were given as pure compounds, not as mushrooms.

Licence and citation

Proposed licence: Creative Commons Attribution 4.0 (CC BY 4.0), to be confirmed by Organic. Cite as: Organic (2026). Atlas dataset 003: Mushrooms and Head Injury, version 0.2.

Data dictionary

COLUMN	MEANING
record_id	Stable ID for the record (R01, R02…). Never reused.
common_name / latin_name	The mushroom, by common and scientific name.
effect	One of: protects brain tissue; calms inflammation; helps movement or thinking recover.
evidence_level	Lab, Animal, Small human trials or Large human trials (number 1–4 in evidence_level_number).
study	Who or what was studied: animal, injury method, dose, timing and group size where reported.
compound	The part or compound tested. 'Pure compound' means it was not given as a mushroom.
finding	A paraphrased summary of the result, never copied text.
peer_reviewed	Yes if the source was reviewed by other scientists before publication; No for preprints.
source_*	Title, journal, year, type, DOI and link of the one source behind the record.
extracted_by / human_checked	Who extracted the record (SI level 2) and whether a person has checked it yet.

Notices and disclaimers

Please read these before using anything on this page.

Not medical advice

This page summarises published research for education and research planning. It does not diagnose, treat or recommend anything for any person. Anyone with a head injury should be assessed by a medical professional. Athletes should follow their sport's concussion and return-to-play rules and their clinician's advice.

Not evaluated by the FDA

These statements have not been evaluated by the U.S. Food and Drug Administration. Nothing on this page is intended to diagnose, treat, cure or prevent any disease.

Psilocybin is a controlled substance

Psilocybin is illegal under US federal law and in many countries, with limited exceptions in some states. It is included here only because it is being studied in clinical trials. This page gives no guidance on obtaining or using it.

Not an identification guide

The illustrations are artistic drawings. Many poisonous mushrooms look like others, and mistakes can be fatal. Never eat a wild mushroom unless an expert has identified it in person. If you think someone has eaten a poisonous mushroom in the United States, call Poison Control at 1-800-222-1222 or emergency services right away.

Products differ from studies

Supplements often use different species, parts, extracts and doses from those studied, and quality varies. A study result does not mean a product will work or is safe.

SI-generated content

Findings were extracted and summarised by Atlas, the SI, and paraphrased from their sources. SI-written passages are marked in blue-edged boxes. Records have not yet been verified by a person, so always check the original source.

Accuracy and liability

This dataset is provided as is, for research and education, and may contain errors or become out of date. Organic accepts no responsibility for decisions made using it. Please report errors so they can be corrected in the next version.

Copyright and independence

Findings are paraphrased summaries; the original papers belong to their authors and publishers and are linked for reading. The illustrations are original to Atlas. Organic does not sell mushroom products and has no funding from any mushroom, supplement or psychedelic company.

Glossary

Plain meanings for the technical words on this page.

Traumatic brain injury (TBI)

Damage to the brain from a physical force, such as a blow, fall or jolt. A concussion is a mild TBI.

Controlled cortical impact

A lab method that injures an animal's brain in a precise, repeatable way, used to study TBI.

Weight drop

A lab method where a weight is dropped onto an animal's head to cause a brain injury.

Microglia

The brain's own immune cells. After injury they can cause harmful inflammation or help healing.

Oxidative stress

Damage from unstable molecules (free radicals) that builds up after injury.

Nrf2

A switch inside cells that turns on the body's own antioxidant defences.

Blood-brain barrier

The tight lining of the brain's blood vessels that keeps harmful substances out. Injury can make it leak.

Tau (phosphorylated)

A brain protein that can build up after repeated head injuries and is linked to later brain disease.

BDNF

Brain-derived neurotrophic factor, a protein that helps neurons survive and form connections.

Cordycepin

A compound made by cordyceps fungi. The study used it purified and injected.

Psilocybin

The compound in 'magic mushrooms' that causes hallucinations; a controlled substance under US law.

Preprint

A study shared publicly before other scientists have reviewed it.

Case report

A description of one person's experience. It can suggest ideas but cannot show cause and effect.

SI-generated

Written by Atlas's superintelligence and labelled so it is never mistaken for human writing.

Sources

Retrieved 28 October 2026.

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4. Immunoexpression of Vascular Endothelial Growth Factor, β-cell Lymphoma 2 and Cluster of Differentiation 68 in Cerebellar Tissue of Rats Treated with Ganoderma lucidum · International Journal of Morphology 36(4), 2018 · Animal study (summary only read) · doi:10.4067/S0717-95022018000401453
5. Cordycepin confers long-term neuroprotection via inhibiting neutrophil infiltration and neuroinflammation after traumatic brain injury · Journal of Neuroinflammation 18:137, 2021 · Animal study · doi:10.1186/s12974-021-02188-x
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Atlas dataset 003, version 0.2. Text in blue-edged boxes is SI-generated and labelled with its SI level and review status.