Here are the categories and layman's summaries for the provided documents:
Document Categories and Summaries
1. "0000072773.pdf"
•
Category: Biomedical Research - Skin Health & Oxidative Stress
•
Layman's Summary: This research investigated how a natural oil extracted from a microalgae (a type of tiny ocean plant called *Nannochloropsis oceanica*) affects skin cells that have been damaged by UV radiation, like from the sun1. The study found that this microalgae oil helped skin cells recover by boosting their natural defenses against damage, reducing inflammation, and limiting the production of harmful molecules that contribute to oxidative stress and inflammation often caused by sun exposure1.
2. "1-s2.0-S1388245722009385-main.pdf"
•
Category: Clinical Study Protocol - Post-COVID-19 Syndrome
•
Layman's Summary: This document describes the specific rules for who could participate in a study looking at long-lasting fatigue and thinking problems after a mild COVID-19 infection2. To be included, individuals had to have a confirmed COVID-19 infection from which they had recovered without needing hospital care, but they still had to report significant fatigue and/or cognitive difficulties using special questionnaires2.
3. "1429799897_SkaperetalCNSND-DT_NeuroinflammationNeurocognitiveDisorders(2014).pdf" (also "Palmitoylethanolamide -brain 1429799897_SkaperetalCNSND-DT_NeuroinflammationNeurocognitiveDisorders(2014).pdf.pdf")
•
Sources:3...
•
Category: Review Article - Neuroinflammation & Cognitive Disorders
•
Layman's Summary: This paper reviews how inflammation in the brain plays a crucial role in serious conditions like Alzheimer's disease, depression, and other problems affecting thinking and mood3.... It highlights that certain immune cells in the brain, called microglia and mast cells, are key players in this inflammation. The review suggests that using natural fat-like molecules, specifically PEA (N-Palmitoylethanolamine), could offer a new way to treat these conditions by calming down these inflammatory cells and restoring balance in the brain. It also notes that combining PEA with luteolin, another natural compound, can sometimes be even more effective7....
4. "1742-2094-10-20.pdf" (also "Palmitoylethanolamide -brain 1742-2094-10-20.pdf.pdf")
•
Sources:25...
•
Category: Research Methodology - Spinal Cord Injury Histology
•

Layman's Summary: This document describes the precise steps and scoring methods researchers use to prepare and examine spinal cord tissue under a microscope after an injury2527. The goal is to accurately assess the extent of damage and changes in the tissue. It also provides a list of common abbreviations used in spinal cord injury research, including for PEA2628.

5. "42948516.pdf"

- Sources:2930
- Category: Scientific Abbreviations & Experimental Design Snippet
- Layman's Summary: This document is mainly a list of abbreviations for scientific terms commonly used in studies, especially those involving cannabinoids (substances similar to cannabis) and inflammatory processes in the body29. It also includes a brief description of experiments where certain cannabis-related compounds were used to treat tissues from the colon and immune cells to study their effects on inflammation30.

6. "Bortoletto+2023+Frontiers+in+Psychiatry.pdf"

- Sources:31...
- Category: Systematic Review - PEA in Psychosis
- Layman's Summary: This is a detailed review that brought together all existing human and animal studies to investigate PEA's potential role in treating psychotic disorders like schizophrenia and bipolar disorder3136. It specifically examined how PEA might affect brain inflammation and a chemical signaling pathway called glutamate signaling31. The review noted that people with schizophrenia had lower levels of PEA in certain brain areas compared to healthy individuals3839, suggesting that PEA could be a promising area for future therapeutic development in these conditions31.

7. "Cannabinoids-2014.pdf"

- Sources:55...
- Category: Book - Comprehensive Overview of Cannabinoids & Endocannabinoid System
- Layman's Summary: This book offers a broad exploration of cannabinoids, which include compounds found in the cannabis plant (like THC and CBD) and those naturally produced in the body (called endocannabinoids)60.... It explains the body's intricate "endocannabinoid system" (ECS), which involves these compounds, their receptors, and the enzymes that make and break them down70.... The ECS plays a fundamental role in many bodily functions and is being investigated for its therapeutic potential in various conditions, including pain, brain disorders, and certain diseases like cancer58.... The book also discusses the historical journey of cannabinoid research and the ongoing need for clearer scientific terminology due to rapid discoveries in the field62....

8. "Cannabinoids_2020.pdf"

- Sources:117...
- Category: Review Article - Cannabinoids in Spinal Cord Injury
- Layman's Summary: This document reviews the current understanding of how cannabis-derived compounds, known as cannabinoids, might be used to help people with spinal cord injuries117118. It discusses cannabis itself and its specific components, focusing on their potential to alleviate pain and reduce muscle stiffness (spasticity) in individuals with such injuries119121. The review also touches upon challenges in conducting research in this area, such as patient dropouts from studies122.

9. "Endocannabinoids-and-fatty-acid-amides-in-cancer-inflammation-and-related-disorders.pdf"

- Sources:125126
- Category: Review Article - Endocannabinoids in Cancer & Inflammation
- Layman's Summary: This article investigates the anti-tumor and anti-inflammatory properties of natural compounds in the body that are similar to cannabinoids, such as anandamide and PEA125. Drawing on historical knowledge of marijuana's medicinal uses, it suggests that manipulating these natural compounds could lead to new treatments. The document provides data showing that levels of PEA are increased in inflamed tissues, indicating its involvement in the body's response to inflammation126.

10. "Footnotes-only-final.pdf"

- Sources:127...
- Category: Miscellaneous Research References
- Layman's Summary: This document appears to be a collection of scientific footnotes or citations covering various medical and research topics. It references information on subjects such as the medicinal uses of mushrooms, strategies to boost the body's own immune response against cancer, and comparisons of different pain medications (like NSAIDs and opioids) for severe pain conditions127....

11. "JPR-32143-therapeutic-utility-of-palmitoylethanolamide-in-the-treatmen_102512.txt" (and its numerous "jpr-5-437.txt" variants)

- Sources:132...
- Category: Research Summary - PEA's Therapeutic Effects
- Layman's Summary: This document highlights the therapeutic potential of PEA (N-Palmitoylethanolamide) in various health conditions. It indicates that PEA can be beneficial in

treating multiple sclerosis and can help in the recovery from spinal cord injury by reducing the release of certain inflammatory substances from mast cells (a type of immune cell) and promoting the release of nerve-protective factors132.... Furthermore, it suggests that PEA acts as a "glia modulator," meaning it can influence supporting cells in the nervous system to help alleviate neuropathic (nerve) pain133135.

12. "Non-Neuronal Cell Modulation Relieves Neuropathic Pain..pdf" (also "Palmitoylethanolamide -brain Non-Neuronal Cell Modulation Relieves Neuropathic Pain..pdf.pdf")

- Sources:152153
- Category: Research Methodology - Mast Cell Evaluation
- Layman's Summary: This document describes a laboratory method for studying mast cells, which are immune cells involved in allergic reactions and inflammation, in nerve tissues152153. It explains how researchers use specific staining techniques to observe and classify these cells based on their appearance, determining if they are "active" (releasing their contents) or "not active"152153.

13. "PEA Thesis: Sensory and Respiratory"

- Sources:154...
- Category: Academic Thesis - PEA's Therapeutic Applications
- Layman's Summary: This academic thesis offers a comprehensive look at PEA (Palmitoylethanolamide), a natural fatty acid found in the body154159. It explores PEA's ability to reduce inflammation, relieve pain, and protect nerves across a wide range of applications, focusing specifically on its effects in sensory systems (like eyesight, hearing, and smell) and respiratory issues, including those related to COVID-19154155. The thesis emphasizes the importance of new PEA formulations, such as "ultramicronized PEA" (um-PEA) or combinations with other compounds like luteolin or alpha-lipoic acid, which are designed to improve how well the body absorbs and uses PEA to enhance its benefits157158.

14. "PEA_-_Clayton_2021.pdf" (also "Palmitoylethanolamide -brain c66e3d6e8c4e6b6e842e6ee3a9e3ba240381.pdf.pdf")

- Sources:160161
- Category: Review Article - PEA as a Dietary Supplement
- Layman's Summary: This review summarizes the benefits of PEA (Palmitoylethanolamide) as a dietary supplement. It describes PEA as a natural fat-like molecule that has been extensively studied for its anti-inflammatory, pain-relieving, antimicrobial, immune-modulating, and nerve-protective effects160161. The review highlights that PEA is well-tolerated and generally

safe, and that recent advancements in how it's prepared and delivered have overcome previous issues with its absorption by the body160161.
15. "PEA_narrative_review_-_Mateos_2023.pdf"
•
Sources:162
•
Category: Narrative Review - PEA in Pain Management
•
Layman's Summary: This review focuses on the use of oral PEA (Palmitoylethanolamide) for managing various types of acute and chronic pain162. It highlights that, based on scientific evidence, PEA is considered an effective and safe option for pain relief, and suggests that an optimal starting dose is often 600 mg taken every 12 hours. It can be used either as a standalone treatment or in addition to other pain medications162.
16. "Palmitoylethanolamide -brain 328797.pdf" (also "Palmitoylethanolamide -brain Mediators+Inflamm+2013.pdf")
•
Sources:163...
•
Category: Research Study - Nerve Structure & PEA
•
Layman's Summary: This study describes methods for precisely measuring features of nerve fibers, such as their size and the thickness of their protective covering (myelin)163165. It presents findings from experiments involving mice with nerve injuries, showing how PEA treatment affected the myelin thickness in these nerves. The research specifically looked at how PEA's effects might vary depending on the presence of a particular cellular receptor called PPAR-α164166.
17. "Palmitoylethanolamide -brain 1742-2094-11-108.pdf.pdf"
•
Sources:167168
•
Category: Research Methodology - Statistical Analysis & Abbreviations
•
Layman's Summary: This document details the statistical methods used in scientific research to analyze data, explaining how different tests are applied to determine if the observed results are meaningful (usually if the "p-value" is 0.05 or less)167. It also includes a list of abbreviations for various scientific terms, compounds, and receptors relevant to the field of study, such as PEA, cannabinoid receptor 2 (CB2), and tumor necrosis factor alpha (TNFα)168.
18. "Palmitoylethanolamide -brain 20240826-101638-ern4b0.pdf.pdf"
•
Sources:169...
•
Category: Systematic Review Protocol
•

Layman's Summary: This document describes the detailed plan and guidelines for conducting a systematic review, which is a thorough way to gather, evaluate, and summarize all available research on a specific topic169170. It outlines the exact criteria for including and excluding studies, the search strategies for databases, how data will be extracted, and how the quality and results of the individual studies will be assessed and presented171....

19. "Palmitoylethanolamide -brain 3938640.pdf.pdf"

- Sources:178...
- Category: Clinical Trial Protocol - PEA for Pain
- Layman's Summary: This document outlines the design of a clinical study to evaluate the effectiveness of PEA (Palmitoylethanolamide), a naturally occurring fat-like substance, for pain relief, specifically focusing on headache frequency and intensity179. It specifies which patients are suitable or unsuitable for the study based on their health conditions179. The document also mentions PEA's proposed nerve-protective properties and its ability to reduce pain by modulating mast cell activation181.

20. "Palmitoylethanolamide -brain Balvers_2013PEAreview.pdf.pdf"

- Sources:182...
- Category: Review Article - PEA Quantification Methods
- Layman's Summary: This review focuses on the methods used to accurately measure levels of PEA (Palmitoylethanolamide) and other similar fat-like compounds in biological samples, such as blood and tissues182. It highlights that measuring these compounds can be challenging due to their low concentrations and discusses advanced laboratory techniques, like liquid chromatography-tandem mass spectrometry (LC-MS/MS), as the preferred method for precise quantification182184. The document also provides an overview of typical PEA concentrations found in human plasma and tissues182183.

21. "Palmitoylethanolamide -brain BiosyntheticPathwaysofBioactiveN-AcylethanolaminesinBrain (2).pdf.pdf" (also "Palmitoylethanolamide -brain BiosyntheticPathwaysofBioactiveN-AcylethanolaminesinBrain.pdf.pdf")

- Sources:186187
- Category: Scientific Abbreviations - N-Acylethanolamine Biochemistry
- Layman's Summary: This document provides a list of abbreviations for scientific terms related to the natural processes of making and breaking down N-acylethanolamines, which are a class of fat-like compounds found in the brain186187. It includes terms for important enzymes and receptors involved in these biochemical pathways186187.

22. "Palmitoylethanolamide -brain JPPXXPEAmorGbp23.pdf.pdf"

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Sources:188
•
Category: Research Study - Pain Relief Effects
•
Layman's Summary: This research paper describes a study that tested the pain-relieving effects of PEA (Palmitoylethanolamide), morphine, and gabapentin in mice using a specific pain model called the formalin test188. The study found that all three compounds, when administered individually, were able to reduce pain in a dose-dependent manner, meaning that higher doses led to a greater reduction in pain188.
23. "Palmitoylethanolamide -brain Palmitoylethanolamide-Cognitive-Vitality-For-Researchers.pdf.pdf"
•
Sources:189
•
Category: Report Series Description - Cognitive Health Research
•
Layman's Summary: This document describes "Cognitive Vitality Reports," which are scientific analyses created by neuroscientists at the Alzheimer's Drug Discovery Foundation (ADDF)189. These reports evaluate various interventions—including drugs, supplements, and lifestyle changes—for their potential benefits or harms related to brain health and other age-related health conditions that can affect the brain, such as heart disease or cancer189.
24. "Palmitoylethanolamide -brain TOPAINJ-5-12.pdf.pdf" (also "TOPAINJ-5-12.pdf")
•
Sources:190191
•
Category: Historical Review Snippet - PEA in Pain & Inflammation
•
Layman's Summary: This short excerpt traces the history of research on PEA (Palmitoylethanolamide) back to its first mention in scientific literature in 1968190191. It highlights that studies in the 1990s began to show PEA's ability to alleviate pain in animal models and to calm down overactive mast cells, which are immune cells involved in inflammatory responses190191.
25. "Palmitoylethanolamide -brain ar4382.pdf.pdf"
•
Sources:192
•
Category: Research Methodology - Mast Cell Identification
•
Layman's Summary: This document describes a laboratory technique used to identify and stain mast cells (a type of immune cell) in tissue samples, specifically from the paw192. The method involves cutting very thin sections of tissue and using a special blue dye to make the mast cells visible under a microscope for examination192.
26. "Palmitoylethanolamide -brain article-pdf-1730908653-1298.pdf.pdf"
•

Sources:193

- Category: Review Article - PEA in Diabetic Renal Damage
- Layman's Summary: This review explores the potential of PEA (Palmitoylethanolamide) as a treatment for kidney damage caused by diabetes193. It explains that PEA is a natural fat-like compound produced by the body with strong anti-inflammatory and antioxidant effects, which come from its ability to interact with many different molecular targets193. The review concludes that while PEA shows promise in protecting kidney tissues in diabetic conditions, more well-designed human clinical studies are needed to confirm its effectiveness193.

27. "Palmitoylethanolamide -brain bj4040097.pdf.pdf"

- Sources:194
- Category: Research Methodology - Tissue Preparation & Protein Analysis
- Layman's Summary: This document describes the laboratory procedures for preparing animal tissue samples (like brain tissue) for biochemical analysis194. It outlines steps such as grinding the tissue, separating different cell components by spinning them at high speeds, and then measuring the amount of protein present in specific cell parts194.

28. "Palmitoylethanolamide -brain fpsyt-13-1038122.pdf.pdf" (also "fpsyt-13-1038122.pdf")

- Sources:195...
- Category: Systematic Review & Meta-Analysis - PEA in Cognitive Decline
- Layman's Summary: This comprehensive review and meta-analysis synthesizes evidence from various studies to understand the therapeutic effects of PEA (Palmitoylethanolamide) on cognitive decline and neurocognitive disorders such as Alzheimer's disease, Parkinson's disease, stroke, and traumatic brain injury195.... It evaluates both human and animal research, suggesting that PEA can help prevent nerve cell damage, reduce brain inflammation, and support the brain's natural repair processes, ultimately leading to improvements in memory and thinking abilities in various models of these disorders196....

29. "Palmitoylethanolamide -brain jcm-09-00428-v2.pdf.pdf"

- Sources:240241
- Category: Research Study - Ultramicronized PEA in Alzheimer's Disease
- Layman's Summary: This research study investigated the long-term effects of giving ultramicronized PEA (um-PEA) orally to mice that serve as an animal model for Alzheimer's disease240. The findings showed that um-PEA was successfully absorbed into the brain, where it improved cognitive deficits (thinking and memory problems), reduced brain inflammation, and lessened oxidative stress (a type of cellular damage)240. Given that PEA is already approved

for human use in some contexts, the study suggests that um-PEA has strong potential for rapid translation into clinical treatments for Alzheimer's disease240.

30. "Palmitoylethanolamide -brain nihms284332.pdf.pdf"

- Sources:242...
- Category: Research Study - Endocannabinoid Levels in Alzheimer's Disease
- Layman's Summary: This study analyzed brain samples from individuals who had Alzheimer's disease after death and compared them to samples from healthy people242245. The researchers found significantly lower levels of anandamide (a natural cannabis-like compound in the brain) and its precursor molecule in the frontal and temporal cortex regions of Alzheimer's patients242246. These lower levels were linked to poorer performance in cognitive tests related to thinking speed and language242247. The results suggest that a problem with the body's ability to produce anandamide may contribute to the cognitive decline seen in Alzheimer's disease242247.

31. "Palmitoylethanolamide -brain nihms37259.pdf.pdf"

- Sources:250251
- Category: Research Study - PEA & Anandamide Signaling Pathways
- Layman's Summary: This document discusses two important natural compounds in the body, anandamide (AEA) and PEA (Palmitoylethanolamide), both of which are involved in regulating processes like pain, seizures, and inflammation250. While they have similar effects, recent research suggests they might work through separate signaling pathways, meaning they are made and broken down by different specific enzymes250. The document highlights that different enzymes control the levels of AEA and PEA, suggesting that targeting these enzymes individually could provide distinct therapeutic benefits251.

32. "Palmitoylethanolamide -brain nihms407441.pdf.pdf"

- Sources:252...
- Category: Research Methodology - Endocannabinoid Analysis
- Layman's Summary: This document describes the laboratory techniques used to extract and analyze natural cannabis-like compounds (endocannabinoids) from specific areas of the brain, such as the prefrontal cortex, hippocampus, and hypothalamus252. The process involves several steps including homogenization, sonication, and specialized mass spectrometry to accurately measure the levels of these compounds252. The document also briefly notes that these endocannabinoids are involved in regulating brain functions, including those related to dopamine and reward processes254255.

33. "Palmitoylethanolamide -brain npp201225.pdf.pdf"

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Sources:256
•
Category: Research Snippet - Neuroprotection & Cognition
•
Layman's Summary: This short excerpt mentions that certain substances that activate a protein called PPAR-α can protect brain cells (cortical neurons) from inflammatory damage and improve how their internal "power plants" (peroxisomes) function256. It also refers to research on memory problems, specifically spatial navigation deficits, in individuals experiencing mild cognitive impairment256.
34. "Palmitoylethanolamide -brain nutrients-13-01346-1.pdf.pdf"
•
Sources:257...
•
Category: Systematic Review - PEA in Autism Spectrum Disorder (ASD)
•
Layman's Summary: This document outlines a systematic review that explored the role of PEA (Palmitoylethanolamide) in Autism Spectrum Disorder (ASD), a complex developmental condition257. It describes the rigorous process of searching for and selecting studies in both humans and animals that investigated PEA treatments, its levels in the body and brain, and related enzymes258259. The review highlights that PEA has been observed to have anticonvulsant (anti-seizure) and anti-hyperalgesic (pain-reducing) effects261.
35. "Palmitoylethanolamide -brain pea-dolore.pdf.pdf"
•
Sources:262
•
Category: Research Snippet - PEA, Mast Cells & Neuropathic Pain
•
Layman's Summary: This short section highlights that PEA (Palmitoylethanolamide) can be taken orally to reduce swelling (edema) and inflammation-related pain, mainly by calming down the activity of mast cells, which are immune cells involved in inflammatory responses262. It also broadly connects the body's natural cannabis-like compounds (endocannabinoids) to the complex mechanisms of neuropathic (nerve) pain262.
36. "Palmitoylethanolamide -brain pyu111.pdf.pdf"
•
Sources:263...
•
Category: Research Study - PEA/OEA & Neuroinflammation
•
Layman's Summary: This research study investigated whether natural fat-like compounds, Oleoylethanolamide (OEA) and Palmitoylethanolamide (PEA), could protect against brain inflammation and acute stress responses (like stress hormone activation, body temperature changes, and loss of pleasure) caused by a bacterial substance (lipopolysaccharide, LPS) in rats263. The study found that LPS increased inflammatory signals and oxidative stress in the

brain, and that OEA and PEA share similar ways of being made and broken down in the body with other natural cannabis-like compounds263264.
37. "Palmitoylethanolamide -brain qt9vd1t3vz_noSplash_2b844fd66ea3ae478d755d476f4a3ff4.pdf.pdf" (also "qt9vd1t3vz_noSplash_2b844fd66ea3ae478d755d476f4a3ff4.pdf")
•
Sources:266...
•
Category: Research Study - PEA in Spinal Cord Injury
•
Layman's Summary: This study in mice evaluated whether PEA (Palmitoylethanolamide), a naturally occurring compound, could reduce the secondary damage that occurs after a spinal cord injury266271. The researchers found that PEA was effective in reducing pain and inflammation by activating a specific protein called PPAR-α266271. The document also describes the experimental methods used, including how the spinal cord injury was created and how the tissue damage was assessed microscopically267....
38. "Palmitoylethanolamide -brain rstb20110391.pdf.pdf"
•
Sources:276277
•
Category: Review Article - Mast Cell-Glia Axis & PEA in Neuroinflammation
•
Layman's Summary: This review article explores the complex interactions between mast cells (a type of immune cell) and glial cells (support cells in the brain) that contribute to inflammation in the nervous system (neuroinflammation)276. It highlights that mast cells act as "first responders" to injury and can contribute to ongoing inflammation. The paper proposes that PEA (Palmitoylethanolamide), a natural fatty acid, has therapeutic potential to reduce this neuroinflammation by modulating the activity of these non-neuronal cells and helping to resolve inflammatory processes276277.
39. "Palmitoylethanolamide -brain s00405-023-08085-8.pdf.pdf" (also "s00405-023-08085-8.pdf")
•
Sources:278...
•
Category: Clinical Study Methodology - Olfactory Dysfunction Assessment
•
Layman's Summary: This document describes the methods used to assess a patient's sense of smell, particularly in cases of olfactory dysfunction (smell problems) occurring after COVID-19 infection278.... It details the use of a standardized "Sniffin' Sticks" identification test to score smell function and how patients are categorized as having normal smell, reduced smell (hyposmia), or no smell (anosmia)279281. Information about the patient's medical history and COVID-19 experience is also collected278280.
40. "Palmitoylethanolamide -brain s00405-024-08548-6.pdf.pdf" (also "s00405-024-08548-6.pdf")

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Sources:282...
•
Category: Clinical Study Methodology - Qualitative Smell Disorders & PEA
•
Layman's Summary: This document outlines the process for interviewing patients about qualitative smell disorders, such as parosmia (distorted smells) or phantosmia (phantom smells), which can occur after COVID-19282285. It also mentions that PEA (Palmitoylethanolamide) is a natural fat-like substance being studied for its anti-inflammatory and nerve-protective properties, specifically noting its ability to target glial cells (brain support cells) and mast cells (immune cells)284287.
41. "Palmitoylethanolamide -brain s11481-025-10171-z.pdf.pdf" (also "s11481-025-10171-z.pdf")
•
Sources:288...
•
Category: Systematic Review - Cannabinoids in Ischemic Stroke
•
Layman's Summary: This comprehensive review examines how cannabinoids (compounds found in cannabis) might help with brain inflammation that occurs after an ischemic stroke, a condition where blood flow to the brain is interrupted288300. It summarizes numerous animal studies showing that cannabinoids can reduce brain inflammation, prevent cell death, and improve neurological recovery by interacting with specific cannabinoid receptors (CB1 and CB2)288.... However, the review also points out that translating these promising animal findings into human treatments is challenging, partly because cannabinoids can sometimes cause side effects like anxiety, cognitive issues, or psychosis288300.
42. "Palmitoylethanolamide -brain s12974-019-1514-4.pdf.pdf" (also "s12974-019-1514-4.pdf")
•
Sources:315...
•
Category: Scientific Abbreviations & Pharmacology - Endocannabinoid System & PEA
•
Layman's Summary: This document provides a list of abbreviations for scientific terms related to the endocannabinoid system (the body's natural system involving cannabis-like compounds) and inflammation, including PEA (Palmitoylethanolamide) and different cannabinoid receptors315317. It also briefly notes that PEA is considered important for overall health of the central nervous system (brain and spinal cord) and has potential as a "multitarget analgesic," meaning it can relieve pain by acting on multiple pathways in the body316318.
43. "Palmitoylethanolamide -brain sasso.pdf.pdf" (also "sasso.pdf")
•
Sources:319...
•
Category: Research Snippet - Neurosteroid Research & Methodology
•

Layman's Summary: This section discusses neurosteroids, which are hormone-like compounds naturally made in the brain319324. It describes how scientists identify where these compounds are located within brain cells, for example, in nerve cells or supporting glial cells320325. It also outlines the laboratory methods used to measure their amounts with high precision, such as gas chromatography-mass spectrometry321.... Additionally, it mentions that enzymes responsible for breaking down natural cannabis-like compounds are found in specific compartments within brain cells323328.

44. "Palmitoylethanolamide -brain srep16676.pdf.pdf" (also "srep16676.pdf")

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Sources:329...

•

Category: Research Methodology - Protein Analysis & Statistics

•

Layman's Summary: This document outlines standard laboratory procedures for measuring proteins in biological samples, including how to prepare the samples, separate proteins by size using gel electrophoresis, and then detect them using methods like Western blotting329331. It also describes the statistical tests typically employed to analyze the collected data, ensuring that any observed differences between groups are scientifically significant (meaning they are unlikely to be due to chance)330332.

45. "Palmitoylethanolamide -brain srep23481.pdf.pdf"

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Sources:333334

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Category: Research Summary - PEA in Brain Injury

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Layman's Summary: This document summarizes research indicating that systemic administration of PEA (Palmitoylethanolamide) can help prevent or reduce the release of pro-inflammatory cytokines (signaling molecules that cause inflammation) after an experimental brain injury333. It supports the broader idea that naturally occurring cannabis-like compounds in the body (endocannabinoids) play a role in protecting the central nervous system from injury and inflammation334.

46. "Palmitoylethanolamide antioxidants-09-00216.pdf"

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Sources:335...

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Category: Review Article - PEA, Neuroinflammation & Resolution

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Layman's Summary: This review explains that inflammation in the nervous system (neuroinflammation) is a key factor in many brain disorders, including Parkinson's, Alzheimer's, depression, and autism335. It highlights that the body has natural ways to resolve this inflammation, and fat-like molecules called lipid mediators, particularly PEA (Palmitoylethanolamide), play a crucial role in this process336.... While PEA itself is anti-inflammatory and neuroprotective, it doesn't directly act as an antioxidant, which is why combining it with antioxidants like luteolin can make it more effective335. The review concludes

that PEA supplementation can be a valuable nutritional strategy for conditions characterized by neuroinflammation341.

47. "Palmitoylethanolamide and cancer MICF_ Ana_Lucia_Gomes.pdf" (also "Palmitoylethanolamide and cancer cells-11-04102-v4.pdf" and "cells-11-04102-v4.pdf")

- Sources:343...
- Category: Monograph/Review Article - Cannabis/Cannabinoids in Dermatology
- Layman's Summary: This comprehensive document discusses the growing use of cannabis and its compounds (cannabinoids), including PEA, in dermatology343.... It explains how the body's natural endocannabinoid system works within the skin and how various cannabinoids can interact with this system to manage inflammatory skin diseases, affect skin cell growth, and reduce symptoms like pain and itching344.... It highlights clinical studies where PEA has shown benefits for conditions like dry, itchy skin (asteatotic eczema)360366. The document also categorizes different types of cannabinoids and mentions common side effects when cannabis products are taken orally350....

48. "Palmitoylethanolamide and cancer The-rise-and-fall-of-anandamide-processes-that-control-synthesis-degradation-and-storage.pdf"

- Sources:368
- Category: Research Summary - Anandamide Metabolism
- Layman's Summary: This document describes how the body maintains a balance of anandamide (AEA), a natural compound similar to those found in cannabis368. It explains that AEA levels are controlled by how quickly it's made, how it's broken down by specific enzymes, and how it's stored in tiny fat pockets within cells. The document also notes that AEA can be converted into other molecules that can still activate the same cellular targets, effectively continuing its signaling role368.

49. "Palmitoylethanolamide and cancer s40122-021-00239-y.pdf"

- Sources:369...
- Category: Narrative Review - Nutrition, Pain, & Neurodegenerative Diseases
- Layman's Summary: This review explores how certain food compounds, including specialized medical foods (FSMPs) and general health supplements (nutraceuticals), can help reduce pain369370. It discusses how chronic pain can be linked to "oxidative stress" (a type of cellular damage) and emphasizes that the brain is particularly vulnerable to this damage, which can contribute to the development of neurodegenerative disorders like Alzheimer's and Parkinson's diseases371. The document differentiates between FSMPs, which are specifically formulated for managing diseases under medical supervision, and nutraceuticals, which aim to reduce disease risk370.

50. "Phd_unimib_597745.pdf"
•
Sources:372...
•
Category: Academic Thesis - PEA, Mast Cells & Neuropathic Pain
•
Layman's Summary: This PhD thesis investigates the effects of PEA (Palmitoylethanolamide) on neuropathic (nerve) pain, focusing on how it interacts with mast cells (a type of immune cell) and the nervous system372374. It details the complex laboratory methods used in animal models to induce nerve injury, measure pain responses (like sensitivity to heat or touch), and then examine nerve and spinal cord tissues under a microscope to observe cellular changes, including mast cell activity and nerve damage (demyelination)373.... The thesis also touches on diabetic nerve pain375.
51. "Prot_SAP_000.pdf"
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Sources:389...
•
Category: Clinical Trial Protocol - PEA for Chemotherapy-Induced Peripheral Neuropathy (CIPN)
•
Layman's Summary: This document is the detailed plan for a randomized, placebo-controlled clinical trial designed to test the effectiveness of two different doses of PEA (Palmitoylethanolamide) in treating chemotherapy-induced peripheral neuropathy (nerve damage caused by cancer treatment)389401. It outlines every aspect of the study, including who can participate (eligibility criteria), how the PEA or placebo will be administered, how potential side effects will be monitored and reported, and the specific questionnaires and assessments that will be used to measure the impact on pain and overall quality of life390....
52. "R10Y2021N04A0492.pdf"
•
Sources:405406
•
Category: Clinical Study - PEA + Acetyl-L-Carnitine for Rheumatic Neuropathy
•
Layman's Summary: This study evaluated the effectiveness of adding a fixed combination of PEA (600 mg) and Acetyl-L-Carnitine (500 mg) to standard treatment for patients experiencing peripheral nerve pain as a complication of rheumatic diseases405. The results showed that patients who received this combination treatment experienced a significant improvement in pain levels (measured by various pain scales) compared to those who only received standard therapy405406. This suggests a synergistic anti-inflammatory effect and potentially better adherence to treatment405.
53. "Recent-advances-in-chemistry-therapeutic-properties-and-sources-of-polydatin.pdf"
•
Sources:407
•

Category: Review Snippet - Polydatin Properties

•

Layman's Summary: This brief excerpt introduces stilbenoids, such as polydatin, as natural defense compounds found in many plants, similar to resveratrol407. These compounds are being studied for their various potential health benefits, which include their antioxidant properties407.

54. "Tesi_dottorato_Ziparo.pdf"

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Sources:408

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Category: Research Data - Irritable Bowel Syndrome (IBS) Demographics

•

Layman's Summary: This document presents demographic and clinical data for patients involved in a study related to Irritable Bowel Syndrome (IBS)408. It includes information such as the patients' age and gender, as well as classifications of their IBS subtype (e.g., diarrhea-predominant, constipation-predominant), the severity of their IBS, and scores related to their pain intensity and how much the condition interferes with their daily life408.

55. "Vandevoorde-2007-2.pdf"

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Sources:409...

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Category: Review Article - PEA Mechanisms & Endocannabinoid Metabolism

•

Layman's Summary: This review explores PEA (Palmitoylethanolamide), a natural compound similar to anandamide, found in various body tissues409. It discusses PEA's diverse properties, including its ability to prevent seizures, reduce abnormal cell growth, relieve pain, and fight inflammation409. The article delves into how PEA might work, suggesting it could act through a "CB2-like" receptor or by enhancing the effects of other natural cannabis-like compounds by slowing their breakdown (an "entourage effect")409. It specifically identifies a protein called PPAR-α as a key mediator of PEA's anti-inflammatory actions409. The document also details the enzymes responsible for breaking down these natural compounds, like FAAH and NAAA, and discusses how their activity changes in various diseases, including the increased activity of COX-2 in conditions like spinal cord injury and Alzheimer's disease410....

56. "alcoholism treatment s12944-024-02092-2.pdf"

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Sources:413...

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Category: Review Article - Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)

•

Layman's Summary: This review discusses the latest developments in understanding and managing Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD), a prevalent chronic liver condition previously known as non-alcoholic fatty liver disease (NAFLD)413414. It emphasizes that the root cause of MASLD lies in systemic metabolic dysfunction and that this new definition allows for better patient classification and more personalized treatment414415.

The review highlights that MASLD is associated with higher risks of overall mortality and diabetes-related mortality415, and calls for continued clinical trials and potentially combination therapies to target the multiple factors involved in the disease416.

57. "cancers-2020_12-4-00870.pdf"

- Sources:421...
- Category: Research Study - Endocannabinoids in Bladder Cancer
- Layman's Summary: This study investigated the levels of natural cannabis-like compounds (endocannabinoids and NAEs like PEA) in the urine of healthy individuals and patients with bladder cancer422423. It found that two specific compounds, AEA and SEA, were significantly increased in the urine of bladder cancer patients424.... The research suggests these compounds could serve as potential non-invasive biomarkers for bladder cancer430. Additionally, the study analyzed the genetic expression of enzymes that process these compounds and found that high levels of one enzyme (NAAA) and low levels of another (FAAH) were associated with a poorer prognosis in bladder cancer426....

58. "cannabinoid-CNS-CA-review-article.pdf"

- Sources:432...
- Category: Review Article - Cannabinoid Mechanisms in CNS & Cancer
- Layman's Summary: This review broadly discusses different types of cannabinoids—including those from plants, those made naturally in the body, and synthetic versions—and their various ways of acting in the body432. It explains that while many cannabinoids primarily work through specific "cannabinoid receptors" (CB1 and CB2), they also have other important targets and mechanisms of action that do not involve these classic receptors432434. The review emphasizes that understanding these diverse actions is crucial for developing more effective and targeted therapies for conditions affecting both the central nervous system and cancer432434.

59. "chavatte review.pdf"

- Sources:436437
- Category: Review Snippet - Enzyme Activity & Inflammation Pathways
- Layman's Summary: This short excerpt mentions that a specific enzyme, FAAH, breaks down natural cannabis-like compounds (endocannabinoids) in certain immune cells called macrophages436. It also highlights the complex roles of two important cellular pathways—NF-κB signaling and PPARs (Peroxisome Proliferator-Activated Receptors)—in driving inflammation and cancer, linking them to lipid (fat) signaling within the body437.

60. "fcimb-1-1566290.pdf"

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Sources:438
•
Category: Diagram Description - The Endocannabinoidome
•
Layman's Summary: This document describes a figure that provides a comprehensive overview of the "endocannabinoidome," which is the body's extensive natural system involving cannabis-like compounds438. The diagram illustrates how these compounds, such as anandamide (AEA) and 2-AG, interact with various receptors (like CB1, CB2, GPR55, and PPARs) to regulate nerve and immune signals. It also details the complex processes by which these endocannabinoids and related fat molecules are made and broken down in the body438.
61. "fnut-1-1560654.pdf"
•
Sources:439...
•
Category: Clinical Study - PEA + Melatonin for Migraine
•
Layman's Summary: This document details a clinical study that tested a combination of hydrodispersible PEA and melatonin (called PEATONIDE®) for managing migraines439. It describes how patients were randomly assigned to receive either the active treatment or a placebo over three months, with neither the patients nor the researchers knowing who received which treatment439. The study measured key outcomes like the frequency, intensity, and duration of migraine attacks, as well as the use of other pain relievers and associated symptoms439440. It also outlines the statistical methods used to analyze the study results441.
62. "futurepharmacol-03-00058-v2.pdf"
•
Sources:444...
•
Category: Review Article - PEA as Anti-Inflammatory & Immunomodulator
•
Layman's Summary: This review explores the therapeutic potential of PEA (Palmitoylethanolamide), a natural compound similar to cannabis-related substances, highlighting its roles as an anti-inflammatory and immune-modulating agent444. It explains that PEA's benefits extend across various body systems, including the brain, gut, blood vessels, and respiratory system, and that it effectively manages pain and reduces inflammatory responses444. The document notes that PEA works by interacting with several key molecular targets and directly influencing the body's inflammatory processes. It also discusses the link between vascular dementia and inflammatory states446. The review emphasizes the ongoing need for rigorous clinical trials to confirm PEA's effectiveness in humans444.
63. "ijms-21-09526-v2.pdf"
•
Sources:447...
•
Category: Review Article - PEA in Neuroinflammation Control
•

Layman's Summary: This review discusses neuroinflammation (inflammation in the nervous system), explaining that it's a natural protective response that can become harmful if not properly controlled447. It highlights that specialized non-neuronal cells in the nervous system, such as mast cells, microglia, and astrocytes, are key players in this process448. The document states that the control of these cells depends on the body's "on-demand" production of PEA (Palmitoylethanolamide)447. When the body's natural PEA levels are insufficient, increasing them through dietary supplementation with specially formulated (micronized or ultramicronized) PEA, sometimes combined with antioxidants, has shown to be effective and safe in controlling neuroinflammation in various neurological disorders and pain syndromes449450.

64. "molecules-27-06474-v3.pdf"

- Sources:453
- Category: Review Snippet - Polydatin's Neuroprotective Effects
- Layman's Summary: This short section discusses polydatin, a natural compound, and its potential to protect the brain and nerves in various neurological diseases453. It explains that polydatin's protective actions are linked to its ability to reduce oxidative stress (a type of cellular damage), lessen inflammation, and prevent unnecessary cell death453. It mentions that studies have shown its therapeutic benefits in conditions like Parkinson's disease, stroke, and traumatic brain injury453.

65. "ns-2020-0080c.pdf"

- Sources:454...
- Category: Review Article - Cannabinoids (especially CBD) in CNS Disorders
- Layman's Summary: This review explores the therapeutic properties of cannabinoids, with a particular focus on CBD (Cannabidiol), in treating disorders affecting the central nervous system (CNS)455456. It explains that cannabinoids can help reduce inflammation, muscle stiffness, and nerve pain, and can also protect nerve cells after injury or inflammation in the brain455. The review specifically highlights CBD's ability to influence oxidative signaling and the production of harmful molecules (reactive oxygen species or ROS), which are integral to brain inflammation and immune responses454457.

66. "nutrients-12-03158-v2.pdf" (also "vitamin for eyes nutrients-12-03158-v2.pdf")

- Sources:458...
- Category: Review Article - Natural Compounds for Glaucoma
- Layman's Summary: This review examines how natural compounds, such as vitamins and flavonoids (found in plants), might be beneficial for eye conditions like glaucoma458.... It explains that vitamins A, D, E, and K are fat-soluble, while vitamins B and C are water-soluble, and their protective effects are largely due to their antioxidant properties458461. The review

notes that while clinical data suggest flavonoids can help maintain or restore visual field in glaucoma patients, they generally do not significantly affect eye pressure459462.
67. "obm.neurobiol.2004076.pdf"

- Sources:464
- Category: Research Snippet - PEA/Luteolin in Cerebral Ischemia
- Layman's Summary: This short reference mentions a specific case report and other studies about a combination of PEA and luteolin (a natural antioxidant), in a special "co-ultramicronized" form, being used in cases of cerebral ischemia (reduced blood flow to the brain, like in stroke)464. It suggests that the research shows its beneficial effects translate from animal studies to human patients464.

68. "palmitoylethanolamide_causes_dose_dependent_changes_in_brain_function_and_the_lipidome.txt"

- Sources:465...
- Category: Research Study - PEA's Effects on Brain Function & Lipid Chemistry
- Layman's Summary: This extensive study investigated how PEA (Palmitoylethanolamide), a commonly used natural supplement, affects brain function and the brain's fat-like chemicals (lipids)492. Using advanced techniques like MRI (magnetic resonance imaging) for brain mapping and specialized chemical analysis (lipidomics), the researchers were able to align their data to a detailed brain atlas and analyze various brain regions465.... The study observed dose-dependent changes in animal behavior and identified how PEA influences the functional connections between different areas of the brain, as well as changes in brain lipid chemistry493....

69. "phd_unisi_107190.pdf"

- Sources:558...
- Category: Academic Thesis Introduction - Cannabinoids, ECS & Cancer
- Layman's Summary: This document serves as the introduction to a PhD thesis, providing a broad overview of cannabinoids, including those derived from the cannabis plant (phytocannabinoids), those naturally produced by the body (endocannabinoids), and synthetic versions558561. It delves into the endocannabinoid system (ECS), explaining its key receptors and the enzymes that process cannabinoids, and how this system often behaves abnormally in cancer559562. The thesis also discusses the complex environment surrounding tumors, including how cancer cells alter their metabolism and the role of substances like lactate in this microenvironment559564.

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How is PEA analyzed in biological samples?