

# **Palmitoylethanolamide/Luteolin and Methylene Blue**

## **List of uses**

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Palmitoylethanolamide is a natural lipid mediator, an endogenous modulator for body balance.

General Health Benefits (Palmitoylethanolamide/Luteolin)

Anti-inflammatory, Analgesic, Neuroprotective & Cognitive Restoration, Immunomodulatory, Tissue Repair & Regeneration, Gut Health, Ocular Health.

### **Investigational Therapeutic Applications (Evidence Strength Varies)**

- **Neurodegenerative & Cognitive Impairment**

- **Alzheimer's Disease (AD)**
- **Mild Cognitive Impairment (MCI)**
- **Frontotemporal Dementia (FTD)**
- **Parkinson's Disease**
- **Multiple Sclerosis**
- **Traumatic Brain Injury**
- **Stroke**
- **Amyotrophic Lateral Sclerosis**
- **Epilepsy (Seizures)**
- **Neonatal Anoxia-Ischemia**
- **Autism Spectrum Disorder (ASD)**
- **Myasthenia Gravis**
- A randomized, double-blinded, placebo-controlled cross-over trial published in 2024 showed that Palmitoylethanolamide improved memory and increased levels of BDNF in healthy adults.

- **Pain Management**

- **Chronic Pain**
- **Neuropathic Pain**
- **Spinal Cord Injury**
- **Osteoarthritis**
- **Fibromyalgia**

- Migraines & Headache
  - Oral/Orofacial Pain
  - Endometriosis & Menstrual Pain
  - Vulvodynia
  - **Metabolic & Organ Health**
    - Nonalcoholic Steatohepatitis; Chronic Kidney Disease/Diabetic Nephropathy; Metabolic Syndrome; Atherosclerosis; Vascular Injury
    - Irritable Bowel Syndrome & Colitis
    - Glaucoma
    - Diabetic Retinopathy
  - **Sensory & Respiratory Conditions**
    - Sleep Disturbance; Anxiety Disorders; Schizophrenia & Psychosis
    - Depression
    - Tinnitus
    - Post-COVID-19 Olfactory Dysfunction
    - Influenza & Common Cold
    - COVID-19 (Lung Inflammation/Cytokine Storm)
  - **Other**
    - Muscle Health & Athletic Performance
    - Atopic Dermatitis (Eczema)
    - Allergic Rhinitis
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## **Methylene Blue (MB)**

Methylene Blue is a synthetic dye. Used diagnostically/surgically; direct therapeutic potential largely investigational.

General Health Benefits (as a direct therapeutic agent in cancer)

Metabolic Disruption, Direct Apoptosis Induction, Tumor Microenvironment Modulation, Sensitizer in Photodynamic Therapy and Sonodynamic Therapies, Stimulation of Anti-tumor Immunity.

### **Investigational Therapeutic Applications**

- **Cancer (as a direct therapeutic agent)**
  - Ovarian, Breast
  - Brain
  - Colorectal, Melanoma, Lung
  - Prostate, Oral/Head & Neck
  - Cervical
  - Esophageal
  - Thyroid

- Renal
- Gastric, Liver
- Pancreatic
- Multiple Myeloma
- Leukemia
- Sarcoma
- Bladder
- Supportive/Palliative Care
  - Ifosfamide-induced Encephalopathy
  - Oral Mucositis
  - Postoperative Cognitive Dysfunction

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#### Note on Combined Use

No evidence supports the combined use of Palmitoylethanolamide and Methylene Blue.

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#### Summary

Palmitoylethanolamide (often with Luteolin) is a versatile compound, established for chronic pain, with other uses investigational. Methylene Blue is primarily diagnostic/supportive; its direct therapeutic role in cancer is largely investigational and preclinical.

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