



## New Zealand Green-Lipped Mussel

SCIENTIFIC NAME  
**Perna canaliculus**

FAMILY  
**Mytilidae**

### ^ Other Common Names

Extrait de Moule, GLM, Green Lipped Mussel, Green Shell Mussel, Mejillón Verde de Nueva Zelandia, Moule à Coquille Verte, Moule à Coquille Verte de Nouvelle-Zélande, Moule aux Lèvres Verte de Nouvelle-Zélande, Moule Vert-Labée de Nouvelle-Zélande, Moule Verte de Nouvelle-Zélande, Mussel Extract, New Zealand Green Lipped Sea Mussel, New Zealand Green Mollusk, NZGLM, Sea Mussel.

### Overview

The New Zealand green-lipped mussel is a type of mollusk with a green shell (15049). It is native to the New Zealand coast. The mussel is consumed locally as food. It is also used as a dietary supplement (94496).

### Safety

**POSSIBLY SAFE** ...when used orally. New Zealand green-lipped mussel extract has been safely used at doses of up to approximately 3000 mg daily for up to approximately 10 months or 4160 mg daily for approximately 3 months (935,15048,94492,94494).

**CHILDREN: POSSIBLY SAFE** ...when used orally in children 6-14 years of age. New Zealand green-lipped mussel extract has been used with apparent safety at doses of up to approximately 780 mg daily for 14 weeks in children weighing up to 45 kg and 1040 mg daily for 14 weeks in children weighing over 45 kg (102378).

**PREGNANCY: POSSIBLY UNSAFE** ...when used orally; avoid using. It may cause retarded fetal development and delay in parturition (936).

**LACTATION:** Insufficient reliable information available; avoid using.

### ^ Adverse Effects

**General:** Orally, New Zealand green-lipped mussel seems to be well tolerated.

#### Most Common Adverse Effects:

*Orally:* Abdominal pain, acid reflux, diarrhea, flatulence, and nausea.

#### Serious Adverse Effects (Rare):

*Orally:* Hepatitis.

#### ^ Dermatologic

Generalized itching has occurred in one child using a lipid extract of New Zealand green-lipped mussel extract (94495).

#### ^ Gastrointestinal

Orally, New Zealand green-lipped mussel or lipid extract can cause reflux, abdominal pain, diarrhea, nausea, or flatulence (15055,15056,54177,54190,54191,94492,94494).

#### ^ Hepatic

Several cases of possible toxic hepatitis and granulomatous hepatitis have been reported for patients taking a specific New Zealand green-lipped mussel extract (Seatone) (54173,54182,54183). Liver function abnormalities have also been reported (94494).

#### ^ Musculoskeletal

Orally, two reports of gout have been associated with the use of freeze-dried New Zealand green-lipped mussel (GlycOmega PLUS, Aroma NZ Ltd.) 3000 mg daily in clinical research (94492).

#### ^ Renal

Orally, fluid retention has been reported as an adverse effect of New Zealand green-lipped mussel (15055,54189).

### ^ Effectiveness

**INSUFFICIENT RELIABLE EVIDENCE to RATE**

**Asthma.** Small clinical studies suggest that oral New Zealand green-lipped mussel extract may modestly improve symptoms and measures of lung function in adults with asthma. It is unclear if oral New Zealand green-lipped mussel is beneficial in children with asthma.

^ **Details:** One small clinical study in adults with mild-to-moderate atopic asthma shows that taking a specific lipid extract of New Zealand green-lipped mussel (Lyprinol, Pharmedica), providing 50 mg omega-3 fatty acids, twice daily for 8 weeks decreases daytime wheezing and increases morning peak expiratory flow (PEF) when compared with placebo. However, this extract does not improve evening PEF or forced expiratory volume (FEV1) (15048). Another small clinical study in college students with persistent asthma shows that taking this same extract, providing 400 mg omega-3 fatty acids, daily for 3 weeks improves symptoms, reduces use of bronchodilators by about 7 puffs per day, and increases mean morning and evening peak flow by about 22 L/min when compared with placebo in patients with persistent asthma (94493). However, a small clinical study in children with moderate asthma shows that taking this extract providing 200 mg omega-3 fatty acids daily for 16 weeks does not reduce the use of asthma medication or improve symptoms when compared with placebo (94495). Reasons for these discrepancies are unclear but may relate to the age of the patients or the severity of asthma at baseline.

**Attention deficit-hyperactivity disorder (ADHD).** It is unclear if oral New Zealand green-lipped mussel extract is beneficial in children with ADHD.

^ **Details:** A small clinical study in children aged 6-14 years with ADHD shows that taking a specific lipid extract of New Zealand green-lipped mussel (Lyprinol), 780 mg daily in children weighing less than 45 kg and 1040 mg daily in children weighing over 45 kg, for 14 weeks does not improve parent-rated levels of hyperactivity, inattention, or impulsivity when compared with placebo. However, it might modestly improve symptoms of hyperactivity and inattention in children without ADHD who are rated as hyperactive or inattentive at baseline (102378).

**Breast cancer.** Although there has been interest in using oral New Zealand green-lipped mussel for breast cancer, there is insufficient reliable information about the clinical effects of New Zealand green-lipped mussel for this purpose.

**Exercise-induced muscle damage.** It is unclear if oral New Zealand green-lipped mussel extract is beneficial for reducing exercise-induced muscle damage.

^ **Details:** A small clinical study in untrained males shows that taking a specific blend of New Zealand green-lipped mussel lipid extract and Antarctic krill oil (ESPO-572, sold as Lyprinol Advanced, Pharmedica), providing 200 mg daily for 30 days, starting 26 days before a downhill run, reduces plasma creatine kinase and tumor necrosis factor-alpha levels when compared with placebo. The effects were similar to those seen with a specific lipid extract of only New Zealand green-lipped mussel (PCSO-524 sold as Lyprinol or Omega XL, Pharmedica) (105509).

**Exercise-induced muscle soreness.** Small clinical studies suggest that oral New Zealand green-lipped mussel extract may reduce exercise-induced muscle soreness in trained and untrained individuals.

^ **Details:** Several small clinical studies in long distance runners and untrained males show that taking a specific lipid extract of New Zealand green-lipped mussel (PCSO-524, sold as Lyprinol or Omega XL, Pharmedica) or a specific blend of New Zealand green-lipped mussel lipid extract and Antarctic krill oil (ESPO-572, sold as Lyprinol Advanced, Pharmedica) reduces delayed-onset muscle soreness when compared with placebo (101896,102379,105509). In long distance runners, taking 400 mg daily for 11 weeks modestly reduces muscle soreness 24- and 48-hours after a 30 km training run (102379). In untrained males, taking 400 mg daily for 30 days, starting 26 days before a downhill run, reduces muscle soreness 72 and 96 hours later. However, there was no effect on pain threshold, thigh swelling, or strength recovery (101896). Also, taking the combination product (ESPO-572), providing 200 mg daily for 30 days, starting 26 days before a downhill run, reduces muscle soreness and increases pain threshold and range of motion when compared with placebo. This product also improved range of motion, but not other measures, when compared with taking the PCSO-524 single-ingredient product (105509).

**Osteoarthritis.** It is unclear if oral New Zealand green-lipped mussel extract is beneficial for improving symptoms of osteoarthritis; the available research is conflicting.

^ **Details:** Several small clinical studies show that some New Zealand green-lipped mussel extracts might reduce symptoms of osteoarthritis, such as pain and stiffness, when compared to baseline (15022,15055,15056,54188,94492). However, other research shows little or no benefit (15022,54190). Most studies have used a specific extract (Seatone, MacFarland Laboratories) (15022,15056,54188). However, other brands (Lyprinol, Pharmedica; GlycOmega PLUS, Aroma NZ Ltd.) have also been used (54190,94492). Doses used in some studies include New Zealand green-lipped mussel powder 1050 mg-1150 mg daily or lipid extract of New Zealand green-lipped mussel 210 mg daily for 3 months (15055,15056). In another study, a freeze-dried extract of New Zealand green-lipped mussel (GlycOmega PLUS, Aroma NZ Ltd.) 1500 mg twice daily for 8 weeks was used (94492).

**Prostate cancer.** Although there has been interest in using oral New Zealand green-lipped mussel for prostate cancer, there is insufficient reliable information about the clinical effects of New Zealand green-lipped mussel for this purpose.

**Rheumatoid arthritis (RA).** It is unclear if oral New Zealand green-lipped mussel extract is beneficial for improving symptoms of RA; the available research is conflicting.

^ **Details:** Some small clinical studies and anecdotal reports suggest that New Zealand green-lipped mussel lipid extracts or powders (including Seaton, McFarlane Laboratories) can reduce symptoms of RA, including pain and stiffness, when compared to baseline (15022,15047,15055,15056). However, other research shows no benefit (935,15022,15053,15054,16050).

Doses used in two of these studies include New Zealand green-lipped mussel powder 1050 mg-1150 mg daily or lipid extract of New Zealand green-lipped mussel 210 mg daily for 3 months (15055,15056).

More evidence is needed to rate New Zealand green-lipped mussel for these uses.

## Dosing & Administration

### • Adult

#### Oral:

Lipid extracts of New Zealand green-lipped mussel have most often been used in doses of 200-400 mg daily for up to 3 months. New Zealand green-lipped mussel powder has most often been used in doses of 1050-1150 mg daily for up to 3 months, while larger doses up to 3000 mg daily have been used for up to 2 months. See [Effectiveness](#) section for condition-specific information.

- **Children**

*Oral.*

Research is limited; typical dosing is unavailable.

- **Standardization & Formulation**

New Zealand green-lipped mussels are available commercially as a freeze dried, ground, and encapsulated product (15022). Some clinical trials have used a lipid extract of New Zealand green-lipped mussel (Lyprinol or Omega-XL) (94493,94494,94495,102378,102379,101896). One capsule of this product contains 50 mg omega-3 fatty acid of which 7-9 mg is eicosapentaenoic acid (EPA) and 5.5-6 mg is docosahexaenoic acid (DHA) (94493,102378,102379,101896).

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## Interactions with Drugs

None known.

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## Interactions with Supplements

None known.

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## Interactions with Conditions

None known.

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## Interactions with Lab Tests

None known.

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## Overdose

There is insufficient reliable information available about the presentation or treatment of overdose with New Zealand green-lipped mussel.

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## Commercial Products Containing: New Zealand Green-Lipped Mussel

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## Pharmacokinetics

There is insufficient reliable information available about the pharmacokinetics of New Zealand green-lipped mussel.

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## Mechanism of Action

**General:** New Zealand green-lipped mussel is a mollusk native to New Zealand. Freeze-dried mussel powder or lipid extracts are typically used in dietary supplements (15022,94493,94494,94495). New Zealand green-lipped mussel contains about 2% lipids. Of these, about 60% are phospholipids, 22% are triglycerides, and 12% are free fatty acids (15064). Polyunsaturated fatty acids (PUFAs) make up about 45% of the total fatty acids. Omega-3 fatty acids, primarily including docosahexaenoic acid and eicosapentaenoic acid, make about 40% of total PUFAs (15049,54161). Omega-6 fatty acids make up about 5% of total PUFAs (15049). Saturated fatty acids make up about 26% of total fatty acids and monounsaturated fatty acids (MUFAs) make up about 23% of total fatty acid content. New Zealand green-lipped mussel also contains sterols. The most abundant sterol is cholesterol, about 30% (15049,15064,54161). New Zealand green-lipped mussel also contains palmitic acid, myristic acid, and stearic acid (105508).

**Anti-arthritis effects:** There is interest in using New Zealand green-lipped mussel for arthritis due to a finding in early cancer research. Cancer patients, who took New Zealand green-lipped mussel preparations to test its potential role against cancer, reported that they had less joint pain and stiffness and improved joint movement (15022). Anti-arthritis effects of New Zealand green-lipped mussel are likely related to its anti-inflammatory effects (15022,54167,107926). However, some animal research also shows that New Zealand green-lipped mussel extract has chondroprotective effects, as evidenced by reduced levels of markers associated with cartilage destruction in a rat model of osteoarthritis (107926).

In a mouse model of rheumatoid arthritis, New Zealand green-lipped mussel appears to modulate the overall severity of arthritis and reduce inflammation, bone erosion, and cartilage damage when compared with a control group. Furthermore, New Zealand green-lipped mussel appears to reduce proinflammatory cytokines including tumor necrosis factor-alpha, interleukin-1- beta, and interleukin-17 inside the joint, and decrease the number of interleukin-17-producing helper T cells. In vitro, New Zealand green-lipped mussel appears to suppress osteoclastogenesis in human- and mouse-derived monocytes when compared with a

control group. Researchers theorize that this may be due to the inhibition of osteoclastogenesis-associated genes or the suppression of tartrate-resistant phosphatase (110714).

**Anti-cancer effects:** There is interest in using New Zealand green-lipped mussel lipids in cancer patients. This is based on the potential for these lipids to cause apoptosis in cancer cells in vitro (94494).

**Anti-inflammatory effects:** Some evidence suggests that New Zealand green-lipped mussel contains a prostaglandin inhibitor that has anti-inflammatory effects (932,933). Some animal models suggest that a freeze-dried mussel extract has anti-inflammatory activity when administered intraperitoneally, but not when administered orally (15022). However, other animal model research shows anti-inflammatory activity when given orally (16051,110714). Omega-3 fatty acids, primarily including, docosahexaenoic acid and eicosapentaenoic acid, make about 40% of total PUFAs (15049). New Zealand green-lipped mussel extract, containing these omega-3 fatty acids, can decrease prostaglandin and leukotriene synthesis, involved in downstream inflammatory processes such as cytokine production (15022,15048,54148,54165,54166,54168,54186). The lipid extract of New Zealand green-lipped mussel has also shown anti-inflammatory effects in animal models (54169). However, anti-inflammatory effects of the mussel have also been attributed to protein or glycogen components (932,933).

**Gastroprotective effects:** There is interest in using New Zealand green-lipped mussel extracts and lipids to protect against gastrointestinal damage associated with non-steroidal anti-inflammatory agents (NSAIDs). The potential gastroprotective effects are likely related to the anti-inflammatory effects of the mussel (94492).

**Weight loss effects:** There is interest in using New Zealand green-lipped mussel oil for weight loss. Animal research shows that consuming New Zealand green-lipped mussel oil prevents weight gain in mice consuming high-fat diets and reduces weight in obese mice consuming high-fat diets (105508).

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## Classifications

[Omega-3 Fatty Acid-Containing Natural Ingredients](#)

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## References

[See Monograph References](#)

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