

****Calcium gluconate is a mineral supplement and medication used to treat or prevent calcium deficiencies. It is commonly administered intravenously in emergencies like hypocalcemia, hyperkalemia, and calcium channel blocker overdose.****

🧪 Chemical Composition

- ****Active Ingredient:**** *Calcium gluconate*
- ****Molecular Formula:**** $C_{12}H_{22}CaO_{14}$
- ****Drug Class:**** Calcium salt
- ****Formulations:****
 - ****Injectable solution:**** 10% (100 mg/mL)
 - ****Tablets:**** 500 mg, 650 mg
 - ****Capsules:**** 500 mg
 - ****Oral powder or syrup**** (less common)

💉 Dosage & Administration

- ****Route:**** Intravenous (IV), oral
- ****Typical Adult Dosage:****
 - ***IV (10% solution):*** 1-2 g (10-20 mL) slowly over 5-10 minutes for acute hypocalcemia
 - ***Oral (tablet):*** 500-1000 mg elemental calcium per day, divided every 8-12 hours
- ****Pediatric Dosage:**** Weight-based; used under medical supervision
- ****Administration Tips:****
 - IV infusion must be slow to avoid cardiac complications
 - Oral forms should be taken 1-2 hours after meals

🏥 Medical Uses

- ****Primary Indications:****
 - ***Hypocalcemia*** (low blood calcium)
 - ***Hyperkalemia*** (high potassium) as a membrane stabilizer
 - ***Magnesium sulfate overdose***
 - ***Calcium channel blocker toxicity***
 - ***Osteoporosis*** and ***osteomalacia*** (as a supplement)
- ****Mechanism of Action:****
 - Replenishes calcium ions, essential for muscle contraction, nerve function, and blood clotting

⚠️ Side Effects

- ****Common:****
 - Injection site pain or irritation
 - Constipation (oral use)
 - Nausea

****Serious:****

- Arrhythmias (especially with rapid IV infusion)
- Hypercalcemia (confusion, fatigue, kidney stones)
- Tissue necrosis (if IV extravasation occurs)
- Hypotension or bradycardia (with IV use)

⚠ Risks & Precautions

- ****Contraindications:****
 - Hypercalcemia
 - Severe ventricular fibrillation
 - Patients on digoxin (risk of arrhythmia)
- ****Pregnancy & Breastfeeding:****
 - Generally considered safe; consult a physician
- ****Drug Interactions:****
 - May interact with digoxin, tetracyclines, bisphosphonates, and certain diuretics
- ****Monitoring:****
 - Serum calcium levels, ECG, and renal function should be monitored during IV therapy

💬 Patient Feedback & Complaints

- ****Positive Feedback:****
 - Effective in managing acute calcium deficiencies
 - Rapid symptom relief in emergencies
 - Oral forms well tolerated for long-term supplementation

****Common Complaints:****

- Pain or burning during IV administration
- Constipation with oral tablets
- Risk of overdose if not monitored

📄 Summary Table

Category	Details
Drug Name	Calcium Gluconate
Active Ingredient	Calcium gluconate
Use supplementation	Hypocalcemia, hyperkalemia, magnesium toxicity, calcium
Dosage	1-2 g IV (10%); 500-1000 mg orally daily

Common Side Effects	Injection site pain, constipation, nausea
Serious Risks	Arrhythmia, hypercalcemia, tissue necrosis
Patient Feedback	Effective; IV discomfort, constipation, requires monitoring
Contraindications	Hypercalcemia, digoxin use, severe heart conditions

Sources: [DrugBank](<https://go.drugbank.com/drugs/DB11126>),
[RxList](https://www.rxlist.com/calcium_gluconate/generic-drug.htm),
[Medscape](<https://reference.medscape.com/drug/calcium-gluconate-344434>)
