



G.A.C

GREEN HERBS & ESSENTIAL OILS

DRIED SEEDS





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GREEN HERBS & ESSENTIAL OILS

G.A.C DRIED CARAWAY SEEDS

HS Codes

- **Whole seeds:** HS Code 0909.61.0000 – "
- **Crushed or ground seeds:** HS Code 0909.62.0000 – "

Aroma & Flavor

- Caraway seeds are renowned for their distinctive aroma and flavor, characterized by:
 - **Anise-like and licorice notes:** Primarily due to the presence of carvone and limonene.
 - **Earthy, citrusy, and peppery undertones:** These contribute to their complex flavor profile.

Texture

- **Whole seeds:** Firm and slightly crunchy, commonly used in baking and cooking.
- **Ground seeds:** More potent in flavor but less crunchy, often used in spice blends.



CHEMICAL PROPERTIES:

- **Essential Oil Content**
 - Yield:** Varies between 0.86% and 8% depending on the variety and growing conditions.
- **Major constituents:**
 - Carvone:** 76.78–80.53%
 - Limonene:** 13.05–20.29%
 - Others:** Dillapiole, germacrene-beta, nothoapiole, and beta-selinene.
- **Fatty Acid Profile**
 - Petroselinic acid:** 31.53–38.36% of total fatty acids, notable for its industrial significance.
- **Density/Volume/Weight**
 - Bulk density:** Approximately 0.45–0.55 g/cm³ for whole seeds.
 - Weight:** Varies based on moisture content and seed size.
- **Loss on Drying**
 - Moisture content:** Typically around 10%; higher moisture can lead to spoilage.
- **Foreign Matter & Insects**
 - Quality standards:** Should be free from foreign matter and insect infestation.
 - Inspection:** Regular quality checks are essential to ensure purity.



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G.A.C DRIED CARAWAY **SEEDS**

SHELF LIFE & STORAGE:

- **SHELF LIFE:** WHOLE SEEDS CAN LAST UP TO 12 MONTHS; GROUND SEEDS HAVE A SHORTER
- **STORAGE CONDITIONS:**

ENVIRONMENT: COOL, DRY PLACE AWAY FROM DIRECT SUNLIGHT.

CONTAINERS: AIRTIGHT CONTAINERS ARE RECOMMENDED TO PRESERVE AROMA AND PREVENT MOISTURE ABSORPTION.

- **AGRICULTURAL DETAILS IN EGYPT**

- **PLANTING**

OPTIMAL PLANTING TIME: LATE OCTOBER TO EARLY NOVEMBER, HARVESTING

HARVEST PERIOD:



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

Jan	feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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- **Dried Anise Seeds:**
- **code :D1**
- **HS Codes:090910 .**
- **Characteristics:**
- **Color:**The seeds are light brown or yellowish-brown in color.
- **Aroma:** Anise has a distinctive, sweet, licorice-like fragrance
- **Flavour & Odour:**Flavor: Sweet, slightly peppery with a strong licorice taste. The flavor is bold and somewhat spicy, characteristic of anise.
- **Odour:** A strong, sweet anise-like scent, making it popular in both culinary and medicinal uses..

- **Essential Oil Content:** 2-4%
- **Density / Volume Weight:**Typically 50-60 g/L for dried anise seeds.
- **Loss on Drying:**Less than 10% for dried seeds.
- **Extraneous Matters:**Typically < 2%, ensuring the product is clean and free from foreign materials.
- **Insects:**Absent in well-handled and properly stored anise.
- **Total Ash Content:**Typically < 8%,
- **Acid Insoluble Ash:**Typically < 3%.
- **pH Level:** The pH of anise seeds is typically 6-7, neutral to slightly acidic :< 1% (for (premium grade).





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G.A.C DRIED ANISE

SHELF LIFE & STORAGE:

- **SHELF LIFE:** : 1-2 YEARS...
- **STORAGE CONDITIONS:** REFRIGERATE AT 0–4°C (32–39 F).

• **REGULATIONS:**

- (EC) NO. 1881/2006 (CONTAMINANTS).
- (EC) NO. 396/2005 (PESTICIDES).

• **UNITED STATES (FDA):**

- **GRAS STATUS:** APPROVED (21 CFR 182.10).

• **EAST ASIA:**

- **CHINA (GB):** HEAVY METALS LIMITS (PB \leq 3 PPM, AS \leq 2 PPM).
- **JAPAN (JAS):** REQUIRES GLYPHOSATE RESIDUE TESTING .

• **PACKAGING:**

- **FRESH:** LOOSE BUNCHES IN VENTILATED CARTONS (5–8 KG/BOX).
- **BULK:** 40-FOOT CONTAINER (~18 TONS, REFRIGERATED)



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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G.A.C
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G.A.C DRIED CORIANDER SEEDS

HS Codes

- **HS Code:** 0909.21 (whole seeds) / 0909.22 (ground) .

- **Aroma & Flavor:**

Primary Notes: Warm, nutty, citrusy, with hints of cedar and floral undertones . The dominant compound is linalool (57–75% of essential oil), contributing to its sweet, spicy aroma .

Secondary Notes: Tartness and earthy tones, with some detecting subtle pepperiness. The aroma intensifies when seeds are toasted or ground .

- **Texture:**

Whole Seeds: Spherical to oblong, ribbed, and hard (1.8–5 mm diameter). Lightweight due to low density .

Ground Powder: Fine and granular, with a slightly gritty mouthfeel .



Chemical Properties:

- **Essential Oil Content:** 0.8–2.1% by weight, primarily linalool, geranyl acetate, and α -pinene .
- **Density/Volume Weight:** $\sim 0.5 \text{ g/cm}^3$ (varies with moisture content) .
- **Loss on Drying:** $\leq 10\%$ moisture content post-drying to prevent mold .
- **Exotic Matter/Impurities:** EU standards limit foreign matter to $\leq 1\%$ (e.g., stems, dust) .
- **Insect Infestation:** Fumigation or UV-C treatment (10 kJ/m^2) reduces microbial/insect contamination .
- **Shelf Life:** 1–2 years if stored in airtight containers away from light/humidity .



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G.A.C DRIED CORIANDER SEEDS

SHELF LIFE & STORAGE:

- **SHELF LIFE:** 1-2 YEARS IF STORED IN AIRTIGHT CONTAINERS AWAY FROM LIGHT/HUMIDITY

- **CULTIVATION IN EGYPT**

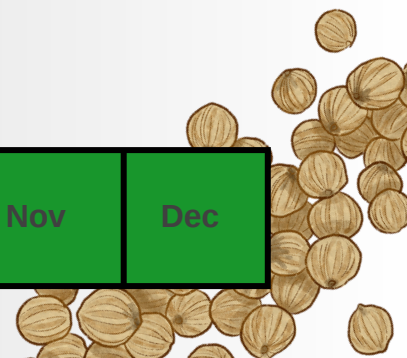
PLANTING DATE: OCTOBER-NOVEMBER (POST-SUMMER HEAT) .

HARVEST TIME: FEBRUARY-MARCH, WHEN SEEDS TURN BROWN AND DRY .



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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G.A.C DRIED CUMIN SEEDS

HS Codes

- **HS Code:** 09093100 (whole seeds, not crushed)

• Aroma & Flavor

- **Primary Aroma Compounds:** Cumin's distinct aroma comes from volatile oils, primarily cuminaldehyde (22.71–25.19%), along with β -pinene, p-cymene, and γ -terpinene .

- **Flavor Profile:** Warm, earthy, slightly bitter, and peppery, with variations depending on origin (e.g., Egyptian cumin has higher essential oil content, enhancing intensity) .

• Regional Differences:

Egyptian Landraces: Assiut landrace has the highest essential oil (8.04%), while Qena has the most cuminaldehyde .

Indian vs. Middle Eastern: Indian cumin tends to be more pungent, while Middle Eastern varieties are milder .

• Texture & Physical Properties

Seed Dimensions: Length (0.63–0.67 mm), width (0.13–0.24 mm), and weight (0.247 mg/1,000 seeds for Qena landrace) .

Bulk Density: Ranges from 810 kg/m³ (El Gharbia, Egypt) to 1,250 kg/m³ (Assiut) 1.

Foreign Matter: EU standards limit to <1% .



Chemical Properties:

- **Essential Oil Content:** Typically 2–5%, but Egyptian varieties can reach 8.04% .
- **Fatty Acids:** Lauric acid is dominant (54.78–62.73%) 1.
- **Loss on Drying (Moisture):** Must be <10% (Codex) or <8% for premium export grades .



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G.A.C DRIED CUMIN **SEEDS**

SHELF LIFE & STORAGE:

• HARVEST & CULTIVATION IN EGYPT

PLANTING: OCTOBER–DECEMBER (WINTER CROP) .

HARVEST: FEBRUARY (EGYPT)



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES ;

Jan	feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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G.A.C DRIED DILL SEEDS

HS Codes

- **HS Code:** Dill seeds are classified under HS Code 0910.99, which covers spices not elsewhere specified
- **Aroma & Flavor:** Dill seeds possess a warm, slightly bitter flavor with a hint of caraway and citrus.
The primary compounds contributing to their aroma are carvone and limonene. Carvone imparts a spicy, caraway-like scent, while limonene adds a fresh, citrusy note.
- **Texture:** The seeds are small, flat, and oval-shaped with a hard, dry texture.
They are typically light brown with darker stripes running lengthwise.



Chemical Properties:

- **Essential Oil Content:** Dill seeds contain essential oils ranging from 3.2% to 4.8%, depending on cultivation conditions. The major constituents are:
 - **Carvone:** 46.1%–49.8%
 - **Limonene:** 37.8%–43.8%
 - **α -Phellandrene, dill ether, and myristicin are also present in smaller quantities.**
- **Other Compounds:** Dill seeds also contain coumarins, flavonoids, phenolic acids, and steroids, contributing to their medicinal properties.





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G.A.C DRIED DILL SEEDS

SHELF LIFE & STORAGE:

- **SHELF LIFE & STORAGE CONDITIONS**

SHELF LIFE: WHOLE DILL SEEDS CAN RETAIN QUALITY FOR UP TO 3–4 YEARS WHEN STORED PROPERLY. GROUND SEEDS ARE BEST USED WITHIN 2–3 YEARS.

STORAGE CONDITIONS: STORE IN AIRTIGHT CONTAINERS IN A COOL, DARK, AND DRY PLACE TO MAINTAIN QUALITY AND PREVENT SPOILAGE.

- **AGRICULTURAL PRACTICES IN EGYPT**

PLANTING PERIOD: DILL IS TYPICALLY SOWN IN THE FALL OR EARLY SPRING. IN EGYPT, PLANTING USUALLY OCCURS IN NOVEMBER.

HARVESTING PERIOD: THE CROP IS GENERALLY HARVESTED IN APRIL, APPROXIMATELY 70 TO 90 DAYS AFTER PLANTING.



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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G.A.C
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G.A.C DRIED FENNEL SEEDS

HS Codes

• **HS Code:** Likely under 090961 (fennel seeds) .

• Aroma & Flavor

Aroma: Dominated by anise-like (licorice) notes (60-65%), with herbaceous (15-20%) and camphoraceous (10-15%) undertones .

Flavor: Sweet, slightly peppery, with a lingering aniseed taste.

When heated or ground, they release warmer, spicier notes .

• Texture

Shape/Size: Elongated, oval (4–10 mm long, ~1 mm wide) .

Density/Weight: Typically packed in 25 kg polypropylene bags for export .



Chemical Properties:

- Key volatile oils include trans-anethole (licorice-like), fenchone (mint/camphor), and limonene .
- Essential Oil Content

High essential oil concentration (varies by origin), with anethole as the primary compound .

- Quality Metrics

Loss on Drying: Moisture content $\leq 8\%$ for export-grade seeds .

Foreign Matter: $\leq 1\%$ admixing allowed .

Insect Infestation: Must be free of live insects; stored in airtight containers to prevent infestation .



G.A.C
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G.A.C DRIED FENNEL **SEEDS**

SHELF LIFE & STORAGE:

- **SHELF LIFE:** UP TO 2 YEARS IF STORED PROPERLY .
 - **STORAGE CONDITIONS:** COOL, DARK PLACE IN AIRTIGHT CONTAINERS;
REFRIGERATION EXTENDS FRESHNESS .
- CULTIVATION & HARVESTING IN EGYPT**
- **PLANTING:** SOWN IN APRIL–JULY .
 - **HARVEST:** TYPICALLY LATE SUMMER TO AUTUMN (AUGUST–OCTOBER) .



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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G.A.C
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G.A.C DRIED FENUGREEK SEEDS

HS Codes

- **HS Code:** 0910.99.10 (fenugreek seeds) under spices
- **Aroma and Flavor**
 - **Aroma:** Described as hickory-like, spicy, and caramel-like when seeds are toasted, with a maple-syrup-like odor due to compounds like sotolone and 2,5-dimethylpyrazine .
 - **Flavor:** Bitter, nutty, and slightly sweet when raw; bitterness reduces upon soaking or sprouting .

The seeds are key in Indian spice blends like curry powder

• **Texture and Physical Properties**

Texture: Hard and angular when dry; softens after soaking or grinding into powder .

Density/Weight: Approximately 323 kcal/100g, with 66% carbs, 26% protein, and 7% fat .

Essential Oil Content: Contains volatile oils (e.g., n-alkanes, sesquiterpenes) contributing to aroma .



Chemical Properties:

- **Loss on Drying:** Moisture content ranges 7.5–10.6% .
- **Foreign Matter/Insects:** Must comply with international standards (e.g., EU/EPA regulations) for purity; storage in airtight containers prevents insect infestation .



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G.A.C DRIED FENUGREEK SEEDS

SHELF LIFE & STORAGE:

- **SHELF LIFE:** 2-3 YEARS IF STORED IN COOL, DARK, AIRTIGHT CONTAINERS; REFRIGERATION EXTENDS LONGEVITY IN HUMID CLIMATES .

DEGRADATION SIGNS: LOSS OF VIBRANT COLOR (DULL APPEARANCE) AND WEAKENED AROMA INDICATE REDUCED POTENCY .

- **CULTIVATION IN EGYPT**

PLANTING: NOVEMBER-FEBRUARY (COOLER MONTHS)

HARVESTING: SPRING TO EARLY SUMMER (APRIL-JUNE) WHEN PODS MATURE



AVAILABLE ALL YEAR ROUND AND IN LARGE

QUANTITIES

Jan	feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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G.A.C
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G.A.C DRIED LUPIN SEEDS

HS Codes

- **Lupin seeds:** 1209.99 (under "Other oilseeds and oleaginous fruits")

Aroma and Flavor

- **Aroma:** Lupin seeds have a mild, nutty, and slightly earthy aroma. The intensity varies between sweet (low-alkaloid) and bitter (high-alkaloid) varieties .

• Flavor:

Sweet lupins: Neutral to nutty, with a slight bitterness if improperly processed .

Bitter lupins: Strongly bitter due to alkaloids (e.g., lupanine).

Traditional soaking/boiling reduces bitterness .

Culinary uses: In Mediterranean cultures, pickled lupins (e.g., tremocos in Portugal, altramuces in Spain) are savory snacks .

• Texture

Raw seeds: Hard and dense; require soaking to soften (24+ hours) .

Processed seeds: Soaked/cooked seeds are firm but tender, similar to chickpeas.

Ground lupin flour is fine and powdery .

Defects: Tough or slimy texture if improperly dried or stored .



Chemical Properties:

- **Protein:** 36–40% (higher than soybeans) .
- **Fiber:** ~18.9% (mostly insoluble) .
- **Fat:** 9.74% (mostly unsaturated) .
- **Alkaloids:** Bitter varieties contain lupanine; sweet varieties have <0.02% alkaloids .
- **Essential Oil Content**

Minimal data in search results. Lupins are not a significant source of essential oils; focus is on protein/oil for food/feed .



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G.A.C DRIED LUPIN SEEDS

SHELF LIFE & STORAGE:

• SHELF LIFE & STORAGE

SHELF LIFE: 1–2 YEARS IF STORED DRY (10–12% MOISTURE) IN AIRTIGHT CONTAINERS .

STORAGE CONDITIONS: COOL (<15°C), DARK, AND DRY TO PREVENT MOLD/INSECTS .

• CULTIVATION IN EGYPT

PLANTING: OCTOBER–NOVEMBER (POST-HARVEST OF CEREALS) .

HARVEST: JUNE–AUGUST (PODS TURN BROWN) .



AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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G.A.C
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G.A.C DRIED BLACK SEED (NIGELLA SATIVA)

HS Codes

- 1207.99 (other oilseeds, not elsewhere specified)

Color:

- Seeds are small, angular, and black or dark brown externally with a white interior .

Aroma:

- Pungent, herbaceous, with notes of oregano, black pepper, and onion when crushed .
- Key aroma-active compounds include thymoquinone (spicy, medicinal), acetoin (buttery), and isobutanoic acid (cheesy) .

Flavor:

- Bitter, peppery, nutty, with slight lemony or smoky undertones .

Texture:

- Hard, crunchy, and slightly oily; similar in size to sesame seeds but more angular .



Chemical Properties:

• Essential Oil Content:

0.4–2.45% volatile oil, dominated by thymoquinone (antioxidant, anti- inflammatory) .
Fixed oil (32–40%) rich in unsaturated fatty acids (linoleic, oleic) .

• Density/Volume Weight:

Not explicitly stated, but seeds are small and lightweight (~2–3.5 mm long) .

• Loss on Drying:

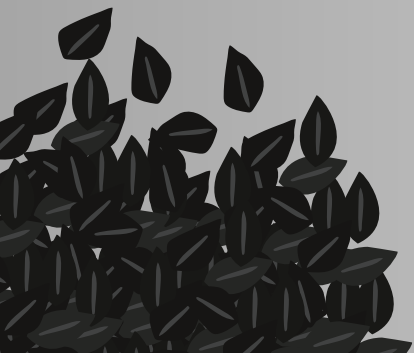
Typically <10% moisture content post-drying

• Extraneous Matter:

Standards require minimal foreign material (e.g., stems, dust) for food-grade seeds .

• Insect Infestation:

Stored seeds must be free of live insects; Nigella seeds repel certain insects naturally .





G.A.C
GREEN HERBS&ESSENTIAL OILS

G.A.C DRIED BLACK SEED **(NIGELLA SATIVA)**



SHELF LIFE & STORAGE:

- 1-2 YEARS IF STORED IN AIRTIGHT CONTAINERS, AWAY FROM LIGHT/HEAT (VOLATILE OILS DEGRADE QUICKLY)

FREEZER STORAGE RECOMMENDED FOR LONG-TERM POTENCY

• CULTIVATION IN EGYPT

PLANTING DATE: AUTUMN (SEPTEMBER–NOVEMBER) OR LATE WINTER (FEBRUARY–MARCH) .

HARVEST TIME: 6–8 WEEKS AFTER FLOWERING; TYPICALLY LATE SPRING TO EARLY SUMMER (MAY–JUNE) .

AVAILABLE ALL YEAR ROUND AND IN LARGE QUANTITIES

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