

## Dr. Duke's Phytochemical and Ethnobotanical Databases

### Chemicals found in Pinus edulis

| Activities Count | Chemical      | Plant Part | Low PPM  | High PPM | StdDev                | Reference Citation                 |
|------------------|---------------|------------|----------|----------|-----------------------|------------------------------------|
| 112              | ASCORBIC-ACID | Seed       | 20.0     | 21.0     | -0.32584931994831046  | USDA's Ag Handbook 8 and sequelae) |
| 77               | ZINC          | Seed       | 40.0     | 50.0     | 0.1382020296387132    | --                                 |
| 65               | MAGNESIUM     | Seed       | 2180.0   | 2650.0   | -0.1169887078856715   | USDA's Ag Handbook 8 and sequelae) |
| 39               | NIACIN        | Seed       | 43.0     | 46.0     | 0.0932133460540848    | USDA's Ag Handbook 8 and sequelae) |
| 31               | THIAMIN       | Seed       | 12.0     | 13.0     | 1.5307148108726454    | USDA's Ag Handbook 8 and sequelae) |
| 29               | TRYPTOPHAN    | Seed       | 1460.0   | 1550.0   | -0.6053664112887261   | USDA's Ag Handbook 8 and sequelae) |
| 28               | CALCIUM       | Seed       | 59.0     | 117.0    | -0.7400347524509366   | --                                 |
| 27               | LINOLEIC-ACID | Seed       | 248820.0 | 264420.0 | 1.3477431955517754    | USDA's Ag Handbook 8 and sequelae) |
| 18               | OLEIC-ACID    | Seed       | 215280.0 | 228780.0 | 0.901605716043594     | USDA's Ag Handbook 8 and sequelae) |
| 15               | FIBER         | Seed       | 11000.0  | 53100.0  | -0.6449499340719145   | --                                 |
| 15               | RIBOFLAVIN    | Seed       | 2.0      | 3.0      | -0.20090831129253928  | USDA's Ag Handbook 8 and sequelae) |
| 15               | METHIONINE    | Seed       | 2070.0   | 2200.0   | -0.5460811806678808   | USDA's Ag Handbook 8 and sequelae) |
| 14               | ARGININE      | Seed       | 22510.0  | 23920.0  | -0.030504068309975933 | USDA's Ag Handbook 8 and sequelae) |
| 14               | POTASSIUM     | Seed       | 5600.0   | 7853.0   | -0.41483433108703255  | --                                 |
| 13               | PALMITIC-ACID | Seed       | 44160.0  | 46930.0  | 0.2687171251309469    | USDA's Ag Handbook 8 and sequelae) |
| 13               | MUFA          | Seed       | 229420.0 | 243800.0 | 0.9721128191484206    | USDA's Ag Handbook 8 and sequelae) |
| 12               | COPPER        | Seed       | 10.0     | 12.0     | -0.2552864959153795   | --                                 |
| 12               | GLYCINE       | Seed       | 5890.0   | 6260.0   | -0.6784087064936613   | USDA's Ag Handbook 8 and sequelae) |
| 8                | GLUTAMIC-ACID | Seed       | 19690.0  | 20925.0  | -0.8770731141347408   | USDA's Ag Handbook 8 and sequelae) |
| 8                | STEARIC-ACID  | Seed       | 20110.0  | 21400.0  | -0.10108270827658257  | USDA's Ag Handbook 8 and sequelae) |
| 8                | TYROSINE      | Seed       | 4240.0   | 4505.0   | -0.7496706395400166   | USDA's Ag Handbook 8 and sequelae) |
| 7                | PHENYLALANINE | Seed       | 4430.0   | 4710.0   | -0.815674639294065    | USDA's Ag Handbook 8 and sequelae) |
| 7                | SALICYLATES   | Seed       | 5.0      | 6.0      | -0.3079859080069262   | J. Amer. Diet. Ass. 85(8):950.     |
| 7                | HISTIDINE     | Seed       | 2770.0   | 2945.0   | -0.8451519352622784   | USDA's Ag Handbook 8 and sequelae) |

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| 6                | IRON                | Seed       | 28.0     | 37.0     | -0.5287176209786577  | --   |
| 4                | LYSINE              | Seed       | 4340.0   | 4615.0   | -1.0136950313408202  | USDA's Ag Handbook 8 and sequelae)                       |
| 4                | THREONINE           | Seed       | 3670.0   | 3900.0   | -0.9478946559921904  | USDA's Ag Handbook 8 and sequelae)                       |
| 4                | PHOSPHORUS          | Seed       | 145.0    | 590.0    | -1.2587591014584043  | USDA's Ag Handbook 8 and sequelae)                       |
| 4                | PUFA                | Seed       | 256680.0 | 272775.0 | 1.2718279447919925   | USDA's Ag Handbook 8 and sequelae)                       |
| 3                | ALANINE             | Seed       | 6050.0   | 6430.0   | -0.7921205426745387  | USDA's Ag Handbook 8 and sequelae)                       |
| 3                | ISOLEUCINE          | Seed       | 4500.0   | 4780.0   | -0.7288031126441246  | USDA's Ag Handbook 8 and sequelae)                       |
| 3                | ASPARTIC-ACID       | Seed       | 10540.0  | 11200.0  | -1.0110621613639723  | USDA's Ag Handbook 8 and sequelae)                       |
| 3                | VALINE              | Seed       | 5980.0   | 6255.0   | -0.7089739224142836  | USDA's Ag Handbook 8 and sequelae)                       |
| 2                | LEUCINE             | Seed       | 8340.0   | 8865.0   | -0.7864689107304623  | USDA's Ag Handbook 8 and sequelae)                       |
| 2                | CYSTINE             | Seed       | 2100.0   | 2230.0   | -0.6400004513896891  | USDA's Ag Handbook 8 and sequelae)                       |
| 2                | PALMITOLEIC-ACID    | Seed       | 2500.0   | 2655.0   | -0.2347354824299904  | USDA's Ag Handbook 8 and sequelae)                       |
| 1                | SODIUM              | Seed       | 675.0    | 860.0    | 0.6494631787875544   | --   |
| 1                | SERINE              | Seed       | 4910.0   | 5220.0   | -1.0261557844237532  | USDA's Ag Handbook 8 and sequelae)                       |
| 0                | PRPTEIN             | Seed       | 115700.0 | 154100.0 |                      | --   |
| 0                | PROLINE             | Seed       | 6220.0   | 6610.0   | -0.9284389216111886  | USDA's Ag Handbook 8 and sequelae)                       |
| 0                | GADOLEIC-ACID       | Seed       | 11640.0  | 12370.0  | 1.1288775598140333   | USDA's Ag Handbook 8 and sequelae)                       |
| 0                | LINOLENIC-ACID      | Seed       | 7870.0   | 8365.0   | -0.43382998245072374 | USDA's Ag Handbook 8 and sequelae)                       |
| 0                | 8,9-ISOPIMARIC-ACID | Plant      |          |          |                      | J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991. |
| 0                | FAT                 | Seed       | 609000.0 | 648035.0 | 2.015540774603066    | --   |
| 0                | KILOCALORIES        | Seed       | 5680.0   | 7140.0   | 1.7853683066498498   | --   |
| 0                | SFA                 | Seed       | 93770.0  | 99650.0  | 0.4006923552454495   | USDA's Ag Handbook 8 and sequelae)                       |
| 0                | CARBOHYDRATES       | Seed       | 131700.0 | 205100.0 | -1.2649975929435797  | --   |
| 0                | WATER               | Seed       | 30000.0  | 59000.0  | -0.6470157712993156  | --   |

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|------------------|---------------|------------|---------|----------|---------------------|--|
| 0                | HEMICELLULOSE | Seed       |         | 56000.0  | 1.0                 | Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29. |
| 0                | ASH           | Seed       | 22600.0 | 27000.0  | -0.6280243315663969 | --   |