

# 枝豆（冷凍食品、ゆで済） L – G C B 1

## 前処理フロー

試料 10g採取（+添加 2ppm混合標準溶液 50uL）

アセトニトリル 10mL

ホモジナイズ

NaCl（食塩） 1g

クエン酸3Na2水和物 1g

クエン酸水素2Na1.5水和物 0.5g

MgSO<sub>4</sub>（無水硫酸マグネシウム） 4g

撈拌（手で振とう 1分間）

遠心分離（3000rpm 5分間）

アセトニトリル層

分取2mL

アセトニトリル-水（1:1）2mL

試料瓶（自動前処理装置にセット）

分取 1 mL

—— 自動前処理装置 STQ-L200

固相 C18-30 mg：精製

洗液 アセトニトリル-水（4:1）1mL

流出液

10%食塩水 20mL

固相 C18-50mg：保持

乾燥（窒素ガス 2分）

連結固相 PSA-30 mg：精製

溶出 アセトン/ヘキサン（15/85）1mL

溶出液

10ppmフェナントレン体+0.1%PEG（300）/アセトン 20uL

定容（1 mL, アセトン/ヘキサン（15/85）で調製）

GC/MS（LVI-S200 大量注入 25 uL：試料12.5mg相当）

## 目的/実験方法

自動前処理装置STQ-L200を用いた  
添加回収試験（GC-B1法）

- 添加濃度（試料中）：10ppb
- 最終バイアル中濃度：5ppb
- 農薬：関東MIX-22, 31, 34, 48, 51
- 検量線：
  - ・PEG共注入標準溶液、絶対、直線検量線
  - ・1点：5ppb
  - ・20ppbフェナントレン体+20ppmPEG  
+農薬混合標準溶液（アセトン-ヘキサン）
- \*フェナントレン体は装置の感度評価の目安として使用。
- 測定：1 Injection によるSCAN測定
- 測定条件：参考資料に従う。

①遠心分離後



②固相（C18-30, C18-50+PSA）



## 考察

大きな夾雑ピークは無く、概ね良好な回収率を得ることができた。

未知検体からエトフェンブロックスが検出された。



STQ-L200

For STQ Method

## Sample



## Information

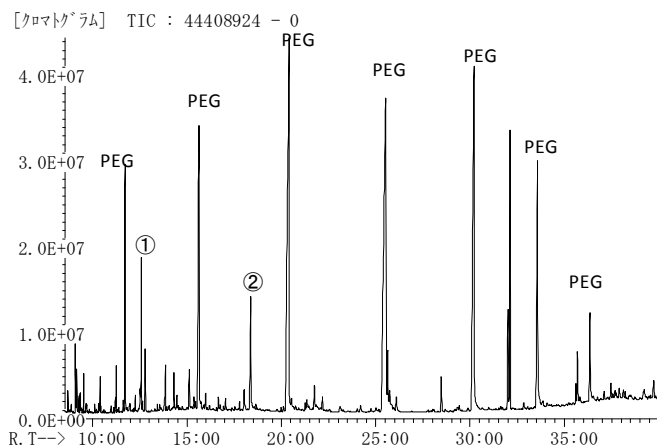
水分：72.1%（ゆで）

脂質：6.1%（ゆで）

脂肪酸：5.58%（ゆで）

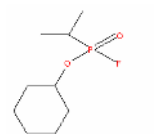
枝豆は、花梗を除去したものをフードプロセッサーで細切。

## Scan Chromatogram

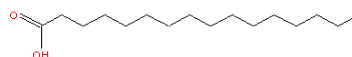


## 【夾雑成分】

① Cyclohexyl isopropylphosphonofluoridate



② Palmitic acid



AISTI SCIENCE

## Product

LVI-S200

STQ-L200

Smart-SPE C18-30

Smart-SPE C18-50

Smart-SPE PSA-30

株式会社アイスティサイエンス

〒640-8341

和歌山市黒田120-6アソート黒田2F

TEL. 073-475-0033

FAX. 073-497-5011

www.aisti.co.jp

| No. | 農薬名                       | 回収率(%) | No. | 農薬名                | 回収率(%) | No. | 農薬名                       | 回収率(%) | No. | 農薬名                  | 回収率(%) |
|-----|---------------------------|--------|-----|--------------------|--------|-----|---------------------------|--------|-----|----------------------|--------|
| 1   | 1-Naphthylacetamide       | ND     | 76  | Cypermethrin-4     | 80.2   | 151 | Flutolanil                | 88.1   | 226 | Prohydrojasmon-1     | 89.5   |
| 2   | 3-Hydroxycarbofuran       | 67.4   | 77  | Cyproconazole-1    | 86.7   | 152 | Flutriafol                | 48.5   | 227 | Prohydrojasmon-2     | St-    |
| 3   | 4,4'-Dichlorobenzophenone | 82.8   | 78  | Cyproconazole-2    | 82.0   | 153 | Fluvalinate-1             | 89.6   | 228 | Prometryn            | 84.4   |
| 4   | Acephate                  | ND     | 79  | DEF(tribufos)      | 83.3   | 154 | Fluvalinate-2             | 84.1   | 229 | Propachlor           | 88.8   |
| 5   | Acetamipride              | ND     | 80  | Deltamethrin       | 91.9   | 155 | Formothion                | 85.5   | 230 | Propanil             | 88.1   |
| 6   | Acetochlor                | 86.5   | 81  | Demeton-S-methyl   | ND     | 156 | Fosthiazate-1             | 86.7   | 231 | Propaphos            | 65.0   |
| 7   | Acrinathrin               | 85.6   | 82  | Diallate-1         | 86.9   | 157 | Fosthiazate-2             | 90.0   | 232 | Propargite(BPPS)     | 83.2   |
| 8   | Alachlor                  | 87.0   | 83  | Diallate-2         | 91.6   | 158 | Halfenprox                | 74.3   | 233 | Propazine            | 90.3   |
| 9   | Allethrin-1,2             | St-    | 84  | Diazinone          | 81.2   | 159 | Hexaconazole              | 77.2   | 234 | Propiconazole-1      | 84.6   |
| 10  | Allethrin-3,4             | 79.1   | 85  | Dichlofenthion     | 83.6   | 160 | Hexazinone                | 56.3   | 235 | Propiconazole-2      | 86.8   |
| 11  | Ametryn                   | 86.2   | 86  | Dichlofluanid      | ND     | 161 | Imazamethabenz methyl     | 50.5   | 236 | Propoxur             | 81.1   |
| 12  | Anilofos                  | 94.4   | 87  | Dichlorvos         | 57.5   | 162 | Imibenconazole            | 69.0   | 237 | Propyzamide          | 83.8   |
| 13  | Aramite-3                 | 91.9   | 88  | Diclocymet-1       | 80.2   | 163 | Imibenconazole-des-benzyl | ND     | 238 | Prothiophos          | 80.2   |
| 14  | Aramite-4                 | 93.2   | 89  | Diclocymet-2       | 84.2   | 164 | Iprobenfos                | 91.4   | 239 | Pyraclofos           | 86.7   |
| 15  | Atrazine                  | 91.1   | 90  | Diclofop-methyl    | 88.4   | 165 | Iprodione                 | 90.4   | 240 | Pyraflufen-ethyl     | 85.8   |
| 16  | Azaconazole               | 85.1   | 91  | Dicloran           | 90.7   | 166 | Isazophos                 | 90.2   | 241 | Pyrazophos           | 90.9   |
| 17  | Azinphos-Methyl           | 100.6  | 92  | Dicrotofos         | ND     | 167 | Isofenphos                | 89.9   | 242 | Pyributicarb         | 81.6   |
| 18  | Benalaxyl                 | 89.1   | 93  | Diethofencarb      | 94.6   | 168 | Isofenphos P=O            | 95.1   | 243 | Pyridaben            | 82.9   |
| 19  | Bendiocarb                | 95.0   | 94  | Difenoconazole-1   | 77.4   | 169 | Isoprocarbe               | 84.3   | 244 | Pyridafenthion       | 91.4   |
| 20  | Benfluranlin              | 89.2   | 95  | Difenoconazole-2   | 83.0   | 170 | Isoprothiolane            | 91.1   | 245 | Pyrifenox-1          | 81.7   |
| 21  | Benfuresate               | 96.2   | 96  | Diflufenican       | 84.6   | 171 | Isoxathion                | 99.8   | 246 | Pyrifenox-2          | 77.6   |
| 22  | Benoxacor                 | 90.5   | 97  | Dimepiperate       | 80.6   | 172 | Isoxathion-ox             | 88.8   | 247 | Pyrimethanil         | 79.8   |
| 23  | BHC-alpha                 | 87.2   | 98  | Dimethametryn      | 86.8   | 173 | Kresoxim-methyl           | 86.3   | 248 | Pyrimidifen          | 78.2   |
| 24  | BHC-beta-gamma            | 78.8   | 99  | Dimethenamid       | 90.2   | 174 | Lenacil                   | 61.1   | 249 | Pyriminobac-methyl-1 | 89.8   |
| 25  | BHC-delta                 | 80.9   | 100 | Dimethipin         | 97.8   | 175 | Malathion                 | 88.2   | 250 | Pyriminobac-methyl-2 | 90.7   |
| 26  | Bifenox                   | 88.1   | 101 | Dimethoate         | ND     | 176 | Mecarbam                  | 83.9   | 251 | Pyriproxyfen         | 89.0   |
| 27  | Bifenthrin                | 80.0   | 102 | Dimethylvinphos-z  | 91.9   | 177 | Mefenacet                 | 87.1   | 252 | Pyroquilon           | 51.7   |
| 28  | Bitertanol-1              | 64.4   | 103 | Dioxathion         | 95.8   | 178 | Mefenpyr-diethyl          | 88.6   | 253 | Quinoclamine         | 66.3   |
| 29  | Bitertanol-2              | 56.0   | 104 | Diphenamide        | 90.4   | 179 | Mepronil                  | 91.6   | 254 | Quinolphos           | 86.0   |
| 30  | Bromacil                  | 51.5   | 105 | Disulfoton         | ND     | 180 | Metalaxyl                 | 82.3   | 255 | Quinomethionate      | 64.5   |
| 31  | Bromobutide               | 90.0   | 106 | Disulfoton sulfone | 92.8   | 181 | Methamidophos             | ND     | 256 | Quinoxifen           | 72.9   |
| 32  | Bromofos methyl           | 84.5   | 107 | Edifenphos         | 84.9   | 182 | Methidathion              | 90.1   | 257 | Quintozen            | 77.1   |
| 33  | Bromophos-ethyl           | 80.9   | 108 | Endosulfan         | 75.4   | 183 | Methiocarb                | 101.8  | 258 | Resmethrin-1         | 38.3   |
| 34  | Bromopropylate            | 86.4   | 109 | Endosulfan II      | 85.9   | 184 | Methoprene-1              | 94.3   | 259 | Resmethrin-2         | 34.8   |
| 35  | Bupimate                  | 91.1   | 110 | Endosulfan sulfate | 72.8   | 185 | Methoprene-2              | 75.1   | 260 | Silafluofen          | 58.0   |
| 36  | Buprofezin                | 87.5   | 111 | EPN                | 82.9   | 186 | Methoxychlor              | 84.4   | 261 | Simazin              | 72.9   |
| 37  | Butachlor                 | 85.6   | 112 | Epoxiconazole      | 86.5   | 187 | Metolachlor               | 91.1   | 262 | Simetryn             | 79.2   |
| 38  | Butamifos                 | 86.9   | 113 | EPTC               | 77.1   | 188 | Metominostrobin-e         | 89.9   | 263 | Spirodiclofen        | 74.5   |
| 39  | Butylate                  | 79.4   | 114 | Esprocarb          | 87.2   | 189 | Metominostrobin-z         | 81.8   | 264 | Spiroxamine-1        | 47.2   |
| 40  | Cadusafos                 | 92.3   | 115 | Ethalfuralin       | 86.5   | 190 | Mevinphos                 | ND     | 265 | Spiroxamine-2        | 40.1   |
| 41  | Cafenstrole               | 86.6   | 116 | Ethiofencarb       | ND     | 191 | Monocrotophos             | ND     | 266 | TCMTB                | St-    |
| 42  | Captafol                  | St-    | 117 | Ethion             | 94.3   | 192 | Myclobutanil              | 82.1   | 267 | Tebuconazole         | 79.9   |
| 43  | Captan                    | ND     | 118 | Ethofumesate       | 97.5   | 193 | Napropamide               | 94.6   | 268 | Tebufenpyrad         | 87.0   |
| 44  | Carbaril                  | 96.8   | 119 | Ethoprophos        | 92.9   | 194 | Nitrothal-isopropyl       | 85.7   | 269 | Tecnazene            | 80.4   |
| 45  | Carbofuran                | 87.7   | 120 | Etofenprox         | 80.1   | 195 | Norflurazon               | 63.5   | 270 | Tefluthrine          | 86.7   |
| 46  | Carboxin                  | ND     | 121 | Etoazole           | 86.5   | 196 | Oryzalin                  | St-    | 271 | Terbacil             | 68.0   |
| 47  | Carfentrazone ethyl       | 93.6   | 122 | Etrinfos           | 86.7   | 197 | Oxadiazone                | 92.0   | 272 | Terbufos             | 69.5   |
| 48  | Chlorbenside              | 65.1   | 123 | Fenamidone         | 82.5   | 198 | Oxadixyl                  | 61.9   | 273 | Terbutryn            | 86.5   |
| 49  | Chlorbufam                | 89.3   | 124 | Fenamiphos         | 66.1   | 199 | Oxyfluorfen               | 87.8   | 274 | Tetrachlorvinphos    | 88.5   |
| 50  | Chlorethoxyphos           | 89.4   | 125 | Fenarimol          | 67.9   | 200 | p,p'-DDD                  | 82.6   | 275 | Tetraconazole        | 87.6   |
| 51  | Chlorfenapyr              | 85.9   | 126 | Fenbuconazole      | 65.5   | 201 | p,p'-DDE                  | 69.3   | 276 | Tetradifon           | 82.7   |
| 52  | Chlorfenson               | 85.9   | 127 | Fenchlorphos       | 84.0   | 202 | Paclobutrazol             | 85.8   | 277 | Thenylchlor          | 89.0   |
| 53  | Chlorfenvinphos-1         | 92.5   | 128 | Fenitrothion       | 93.1   | 203 | Parathion                 | 89.3   | 278 | Thiobencarb          | 88.9   |
| 54  | Chlorfenvinphos-2         | 84.9   | 129 | Fenobucarb         | 93.9   | 204 | Parathion-methyl          | 90.6   | 279 | Thiometon            | ND     |
| 55  | Chlorobenzilate           | 88.6   | 130 | Fenothiocarb       | 91.0   | 205 | Penconazole               | 86.2   | 280 | Tolclofos-methyl     | 87.8   |
| 56  | Chloroneb                 | 80.6   | 131 | Fenoxanil          | 90.7   | 206 | Pendimethalin             | 81.9   | 281 | Tolfenpyrad          | 87.7   |
| 57  | Chlorpropham              | 88.4   | 132 | Fenpropathrin      | 91.6   | 207 | Permethrin-cis            | 78.3   | 282 | Toridimefon          | 89.7   |
| 58  | Chlorpyrifos              | 88.4   | 133 | Fenpropemorph      | 87.5   | 208 | Permethrin-trans          | 83.4   | 283 | Triadimenol-1        | 78.9   |
| 59  | Chlorpyrifos-methyl       | 87.2   | 134 | Fensulfothion      | 92.3   | 209 | Perthane                  | 83.5   | 284 | Triadimenol-2        | 77.9   |
| 60  | Chlorthal-dimethyl        | 86.1   | 135 | Fenthion           | 62.5   | 210 | Phenothrin-1              | 87.4   | 285 | Triallate            | 81.9   |
| 61  | Chlozolate                | 102.9  | 136 | Fenvalerate-1      | 83.3   | 211 | Phenothrin-2              | 86.0   | 286 | Triazophos           | 88.9   |
| 62  | Cinidon-ethyl             | 84.3   | 137 | Fenvalerate-2      | 84.0   | 212 | Phenthoate                | 84.5   | 287 | Tricyclazole         | ND     |
| 63  | Clomazone                 | 92.3   | 138 | FIPRONIL           | 79.2   | 213 | Phorate                   | 61.5   | 288 | Trifloxystrobin      | 97.0   |
| 64  | Cyanazine                 | 76.9   | 139 | Flamprop-methyl    | 89.1   | 214 | Phosalone                 | 92.7   | 289 | Trifluralin          | 86.3   |
| 65  | Cyanophos                 | 90.0   | 140 | Fluacrypyrim       | 96.0   | 215 | Phosmet                   | 100.3  | 290 | Thifluzamide         | 39.3   |
| 66  | Cyfluthrin-1              | 51.7   | 141 | Flucythrinate-1    | 90.9   | 216 | Phosphamidon              | 70.7   | 291 | Uniconazole          | 79.2   |
| 67  | Cyfluthrin-2              | 85.9   | 142 | Flucythrinate-2    | 94.3   | 217 | Phthalide                 | 86.3   | 292 | Vinclozoline         | 90.8   |
| 68  | Cyfluthrin-3              | 91.1   | 143 | Fludioxonil        | 37.1   | 218 | Picolinafen               | 86.8   | 293 | XMC                  | 89.4   |
| 69  | Cyfluthrin-4              | 86.0   | 144 | Flufenpyl-ethyl    | 94.5   | 219 | Piperonyl butoxide        | 88.5   | 294 | Zoxamide             | 80.9   |
| 70  | Cyhalofop-butyl           | 93.9   | 145 | Flumiclorac-pentyl | 89.7   | 220 | Piperophos                | 93.1   |     |                      |        |
| 71  | Cyhalothrin-1             | 96.2   | 146 | Flumioxazin        | 71.6   | 221 | Pirimicarb                | 54.0   |     |                      |        |
| 72  | Cyhalothrin-2             | 88.3   | 147 | Fluquinconazole    | 84.2   | 222 | Pirimiphos methyl         | 92.8   |     |                      |        |
| 73  | Cypermethrin-1            | 92.9   | 148 | Fluridone          | 38.3   | 223 | Pretilachlor              | 91.0   |     |                      |        |
| 74  | Cypermethrin-2            | 86.9   | 149 | Flusilazole        | 85.2   | 224 | Procymidone               | 89.8   |     |                      |        |
| 75  | Cypermethrin-3            | 69.4   | 150 | Fluthiacet-methyl  | 69.8   | 225 | Profenofos                | 92.1   |     |                      |        |

\*PEG共注入標準溶液による絶対検量線を使用 回収率30%未満は ND スタンダードNDは St-