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Chemical constituents in volatile oil from  
plumule of *Nelumbo nucifera*

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莲子心挥发油成分分析

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The plumule of *Nelumbo nucifera* Gaertn., (PNN) has a good function in eliminating the heart-fire, lowering the high blood pressure and tonifying the heart which are related with the alkaloid constituents in PNN<sup>[1,2]</sup>. Great much investigation has been put on the alkaloid constituents, but little has been reported about the volatile oil from PNN so far. Now the analytic results by means of GC-MS are reported in the followings.

The 95% EtOH extract of PNN was partitioned with chloroform, the oil part in chloroform was esterified with 0.4 mol/L sodium hydroxyl methanol solution just before the GC-MS analysis, the analysis was performed on HP6890/HP5973 GC-MS (HP, USA.) at room temperature.

GC condition HP-5 5% Prenyl Mennyl Silox-ane 30 m× 0.25 mm, 0.25 μm quartz capillary column; programmed temperature 60℃ (3 min)→ 10℃ /min→ 280℃ (10 min); inlet temperature 280℃; carrier gas Helium (99.999%) with the flux of 1.0 mL/min; sample size 1 μL; the split ratio is 40: 1.

**Results** The assuring constituents in PNN are listed in Table 1, among which several very important natural products show a high quantity. Vitamin E is well known a kind of antioxidants; sitos-

terol does well in preventing the atherosclerosis,

Table 1 Chemical constituents of volatile oil from PNN

No.	Compounds	Quality %
1	9-hexadecenoic acid	91
2	14-methyl-pentadecanoic acid	97
3	hexadecanoic acid	97
4	heptadecanoic acid	98
5	9, 12-octadecadienoic acid	99
6	phytol	91
7	octadecanoic acid	98
8	9, 12-octadecadienoic acid (z, z)	95
9	3, 7, 11-trimethyl-2, 6, 10-dodecatrien-1-ol	91
10	eicosanoic acid	99
11	heneicosanoic acid	99
12	docosanoic acid	99
13	tetracosanoic acid	98
14	squalene	91
15	testosterone	93
16	gamma-tocopherol	98
17	gamma-sitosterol	95

the squalene plays an important role in cancer prevention and it can also ameliorate the blood circulation, and some fatty acid are constituents of cell membrane. Considering all the valuable constituents, PNN is sure to play more important role for people's health in the near future.

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