|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **配对样本统计** | | | | | |
|  | | 平均值 | 个案数 | 标准差 | 标准误差平均值 |
| 配对 1 | 第一组红 | 73.056 | 27 | 7.3426 | 1.4131 |
| 第二组红 | 76.419 | 27 | 3.1727 | .6106 |
| 配对 2 | 第一组白 | 74.004 | 27 | 5.1146 | .9843 |
| 第二组白 | 70.515 | 27 | 3.9780 | .7656 |

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| --- | --- | --- | --- | --- |
| **配对样本相关性** | | | | |
|  | | 个案数 | 相关性 | 显著性 |
| 配对 1 | 第一组红 & 第二组红 | 27 | .170 | .396 |
| 配对 2 | 第一组白 & 第二组白 | 27 | .261 | .188 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 配对样本检验 | | | | | | | | | |
|  | | 配对差值 | | | | | t | 自由度 | 显著性（双尾） |
| 平均值 | 标准差 | 标准误差平均值 | 差值 95% 置信区间 | |
| 下限 | 上限 |
| 配对 1 | 第一组红 - 第二组红 | -3.3630 | 7.4871 | 1.4409 | -6.3248 | -.4012 | -2.334 | 26 | .028 |
| 配对 2 | 第一组白 - 第二组白 | 3.4889 | 5.5991 | 1.0776 | 1.2739 | 5.7038 | 3.238 | 26 | .003 |

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| --- | --- | --- | --- | --- | --- |
| **配对样本统计** | | | | | |
|  | | 平均值 | 个案数 | 标准差 | 标准误差平均值 |
| 配对 1 | 第一组白葡萄 | 74.2643 | 28 | 5.20493 | .98364 |
| 白葡萄均值 | 75.39800 | 28 | .000000 | .000000 |
| 配对 2 | 第二组白葡萄 | 76.5321 | 28 | 3.17094 | .59925 |
| 白葡萄均值 | 75.39800 | 28 | .000000 | .000000 |
| 配对 3 | 第一组红葡萄 | 73.0556 | 27 | 7.34262 | 1.41309 |
| 红葡萄均值 | 71.78500 | 27 | .000000 | .000000 |
| 配对 4 | 第二组红葡萄 | 70.5148 | 27 | 3.97799 | .76556 |
| 红葡萄均值 | 71.78500 | 27 | .000000 | .000000 |

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| --- | --- | --- | --- | --- |
| **配对样本相关性** | | | | |
|  | | 个案数 | 相关性 | 显著性 |
| 配对 1 | 第一组白葡萄 & 白葡萄均值 | 28 | . | . |
| 配对 2 | 第二组白葡萄 & 白葡萄均值 | 28 | . | . |
| 配对 3 | 第一组红葡萄 & 红葡萄均值 | 27 | . | . |
| 配对 4 | 第二组红葡萄 & 红葡萄均值 | 27 | . | . |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **配对样本检验** | | | | | | | | | |
|  | | 配对差值 | | | | | t | 自由度 | 显著性（双尾） |
| 平均值 | 标准差 | 标准误差平均值 | 差值 95% 置信区间 | |
| 下限 | 上限 |
| 配对 1 | 第一组白葡萄 - 白葡萄均值 | -1.133714 | 5.204927 | .983639 | -3.151974 | .884546 | -1.153 | 27 | .259 |
| 配对 2 | 第二组白葡萄 - 白葡萄均值 | 1.134143 | 3.170939 | .599251 | -.095419 | 2.363705 | 1.893 | 27 | .069 |
| 配对 3 | 第一组红葡萄 - 红葡萄均值 | 1.270556 | 7.342622 | 1.413088 | -1.634089 | 4.175200 | .899 | 26 | .377 |
| 配对 4 | 第二组红葡萄 - 红葡萄均值 | -1.270185 | 3.977988 | .765564 | -2.843825 | .303454 | -1.659 | 26 | .109 |

红葡萄

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| --- | --- | --- | --- | --- | --- |
| **描述统计** | | | | | |
|  | 个案数 | 最小值 | 最大值 | 平均值 | 标准差 |
| 氨基酸 | 27 | 851.170 | 8397.280 | 2385.30815 | 1565.554136 |
| 蛋白质 | 27 | 487.172 | 700.828 | 555.54644 | 45.395768 |
| VC | 27 | .015 | 10.250 | .49522 | 1.953167 |
| 花色苷 | 27 | 7.787 | 408.028 | 105.37707 | 89.615565 |
| 酒石酸 | 27 | 2.060 | 15.510 | 6.41741 | 3.217072 |
| 苹果酸 | 27 | .830 | 18.210 | 5.04667 | 3.807347 |
| 柠檬酸 | 27 | .000 | 2.510 | 1.10111 | .737935 |
| 多酚氧化酶活力 | 27 | 10.427 | 50.434 | 23.82841 | 9.803032 |
| 褐变度 | 27 | 72.905 | 1305.595 | 358.79074 | 337.522803 |
| DPPH自由基 | 27 | .176 | .666 | .34263 | .112090 |
| 总酚 | 27 | 6.075 | 30.114 | 14.70900 | 6.630373 |
| 单宁 | 27 | 3.778 | 25.417 | 13.88789 | 6.620141 |
| 葡萄总黄酮 | 27 | 2.517 | 24.295 | 8.21674 | 4.881138 |
| 白藜芦醇 | 27 | .211 | 26.851 | 4.80341 | 5.474211 |
| 黄酮醇 | 27 | 2.480 | 164.993 | 35.44495 | 40.447418 |
| 总糖 | 27 | 150.337 | 256.190 | 204.07404 | 23.090623 |
| 还原糖 | 27 | 156.038 | 303.950 | 226.47707 | 34.458693 |
| 可溶性固形物 | 27 | 181.200 | 261.100 | 216.16667 | 19.192066 |
| PH值 | 27 | 2.920 | 3.950 | 3.50185 | .244730 |
| 可滴定酸 | 27 | 4.340 | 9.310 | 6.71815 | 1.365923 |
| 固酸比 | 27 | 22.810 | 44.050 | 32.45519 | 6.108750 |
| 干物质含量 | 27 | 18.515 | 28.997 | 24.47774 | 2.469438 |
| 果穗质量 | 27 | 63.610 | 793.470 | 239.89074 | 161.617211 |
| 百粒质量 | 27 | 98.300 | 334.300 | 177.44815 | 59.322563 |
| 果梗比 | 27 | 2.400 | 6.410 | 3.94111 | 1.106930 |
| 出汁率 | 27 | 53.000 | 78.400 | 67.19630 | 7.278603 |
| 果皮质量 | 27 | .102 | .330 | .19215 | .056712 |
| L亮度 | 27 | 23.810 | 28.790 | 26.24037 | 1.156442 |
| a红绿 | 27 | .650 | 12.150 | 1.85185 | 2.132043 |
| b黄蓝 | 27 | -1.570 | 3.870 | -.34111 | .974981 |
| 有效个案数（成列） | 27 |  |  |  |  |

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| **初始聚类中心** | | | | | |
|  | 聚类 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 氨基酸 | 6346.830 | 3434.170 | 8397.280 | 2355.690 | 851.170 |
| 蛋白质 | 563.794 | 536.643 | 585.046 | 542.662 | 587.293 |
| VC | .050 | .075 | .315 | .076 | .416 |
| 花色苷 | 89.282 | 46.186 | 157.939 | 7.787 | 58.469 |
| 酒石酸 | 15.510 | 2.830 | 8.080 | 9.290 | 7.150 |
| 苹果酸 | 2.930 | 2.210 | 2.960 | 8.610 | 1.400 |
| 柠檬酸 | 2.380 | .000 | 1.050 | 1.900 | .820 |
| 多酚氧化酶活力 | 18.123 | 36.774 | 19.303 | 14.260 | 32.026 |
| 褐变度 | 194.262 | 115.943 | 266.640 | 91.468 | 82.359 |
| DPPH自由基 | .379 | .275 | .409 | .279 | .317 |
| 总酚 | 16.192 | 10.671 | 21.685 | 6.075 | 7.348 |
| 单宁 | 13.613 | 15.173 | 20.373 | 4.543 | 3.778 |
| 葡萄总黄酮 | 7.515 | 6.838 | 10.794 | 2.517 | 3.383 |
| 白藜芦醇 | 7.847 | 2.203 | 4.764 | 26.851 | 2.086 |
| 黄酮醇 | 47.220 | 7.727 | 164.993 | 25.575 | 13.917 |
| 总糖 | 205.794 | 244.385 | 256.190 | 209.563 | 173.353 |
| 还原糖 | 259.110 | 223.817 | 273.758 | 237.891 | 197.377 |
| 可溶性固形物 | 216.900 | 246.100 | 257.600 | 210.200 | 195.700 |
| PH值 | 3.560 | 3.290 | 3.910 | 3.530 | 3.680 |
| 可滴定酸 | 6.780 | 9.310 | 7.160 | 5.500 | 4.580 |
| 固酸比 | 31.990 | 26.430 | 35.990 | 38.240 | 42.740 |
| 干物质含量 | 26.948 | 27.376 | 28.997 | 24.527 | 19.758 |
| 果穗质量 | 147.660 | 202.240 | 83.130 | 177.830 | 793.470 |
| 百粒质量 | 106.100 | 172.000 | 105.400 | 118.800 | 245.500 |
| 果梗比 | 4.740 | 2.640 | 5.600 | 3.410 | 3.350 |
| 出汁率 | 60.400 | 71.900 | 71.800 | 58.400 | 68.300 |
| 果皮质量 | .108 | .193 | .170 | .102 | .230 |
| L亮度 | 25.180 | 25.160 | 25.500 | 28.030 | 28.000 |
| a红绿 | 1.210 | 1.810 | 1.090 | 12.150 | 1.090 |
| b黄蓝 | .000 | -.160 | -.620 | 3.870 | -.830 |

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| **迭代历史记录a** | | | | | |
| 迭代 | 聚类中心中的变动 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 1 | .000 | .000 | .000 | 373.786 | 679.131 |
| 2 | .000 | .000 | .000 | 71.373 | 93.433 |
| 3 | .000 | .000 | .000 | 41.804 | 54.770 |
| 4 | .000 | .000 | .000 | 42.121 | 55.676 |
| 5 | .000 | .000 | .000 | .000 | .000 |
| a. 由于聚类中心中不存在变动或者仅有小幅变动，因此实现了收敛。任何中心的最大绝对坐标变动为 .000。当前迭代为 5。初始中心之间的最小距离为 1083.283。 | | | | | |

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| **最终聚类中心** | | | | | |
|  | 聚类 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 氨基酸 | 6346.830 | 3434.170 | 8397.280 | 2291.394 | 1414.552 |
| 蛋白质 | 563.794 | 536.643 | 585.046 | 547.613 | 564.769 |
| VC | .050 | .075 | .315 | .130 | 1.111 |
| 花色苷 | 89.282 | 46.186 | 157.939 | 126.723 | 77.766 |
| 酒石酸 | 15.510 | 2.830 | 8.080 | 6.097 | 6.149 |
| 苹果酸 | 2.930 | 2.210 | 2.960 | 6.777 | 3.328 |
| 柠檬酸 | 2.380 | .000 | 1.050 | 1.046 | 1.166 |
| 多酚氧化酶活力 | 18.123 | 36.774 | 19.303 | 24.452 | 22.685 |
| 褐变度 | 194.262 | 115.943 | 266.640 | 414.051 | 331.379 |
| DPPH自由基 | .379 | .275 | .409 | .347 | .333 |
| 总酚 | 16.192 | 10.671 | 21.685 | 16.387 | 11.918 |
| 单宁 | 13.613 | 15.173 | 20.373 | 14.802 | 11.858 |
| 葡萄总黄酮 | 7.515 | 6.838 | 10.794 | 9.081 | 6.958 |
| 白藜芦醇 | 7.847 | 2.203 | 4.764 | 5.055 | 4.411 |
| 黄酮醇 | 47.220 | 7.727 | 164.993 | 28.556 | 33.728 |
| 总糖 | 205.794 | 244.385 | 256.190 | 207.034 | 190.516 |
| 还原糖 | 259.110 | 223.817 | 273.758 | 232.987 | 209.638 |
| 可溶性固形物 | 216.900 | 246.100 | 257.600 | 220.014 | 203.570 |
| PH值 | 3.560 | 3.290 | 3.910 | 3.463 | 3.531 |
| 可滴定酸 | 6.780 | 9.310 | 7.160 | 6.725 | 6.399 |
| 固酸比 | 31.990 | 26.430 | 35.990 | 33.614 | 31.128 |
| 干物质含量 | 26.948 | 27.376 | 28.997 | 25.026 | 22.721 |
| 果穗质量 | 147.660 | 202.240 | 83.130 | 175.466 | 358.749 |
| 百粒质量 | 106.100 | 172.000 | 105.400 | 172.286 | 199.560 |
| 果梗比 | 4.740 | 2.640 | 5.600 | 4.003 | 3.739 |
| 出汁率 | 60.400 | 71.900 | 71.800 | 66.593 | 67.790 |
| 果皮质量 | .108 | .193 | .170 | .176 | .225 |
| L亮度 | 25.180 | 25.160 | 25.500 | 26.065 | 26.774 |
| a红绿 | 1.210 | 1.810 | 1.090 | 2.304 | 1.363 |
| b黄蓝 | .000 | -.160 | -.620 | -.070 | -.745 |

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| --- | --- | --- |
| **每个聚类中的个案数目** | | |
| 聚类 | 1 | 1.000 |
| 2 | 1.000 |
| 3 | 1.000 |
| 4 | 14.000 |
| 5 | 10.000 |
| 有效 | | 27.000 |
| 缺失 | | 1.000 |

白葡萄

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| --- | --- | --- | --- | --- | --- |
| **描述统计** | | | | | |
|  | 个案数 | 最小值 | 最大值 | 平均值 | 标准差 |
| 氨基酸 | 28 | 664.960 | 5022.140 | 1948.15143 | 910.834530 |
| 蛋白质 | 28 | 402.156 | 642.373 | 506.83978 | 57.755692 |
| VC | 28 | .031 | .904 | .24350 | .246941 |
| 花色苷 | 28 | .372 | 4.103 | 1.47464 | 1.059396 |
| 酒石酸 | 28 | 3.310 | 11.790 | 7.37071 | 2.167025 |
| 苹果酸 | 28 | .000 | 9.630 | 3.80964 | 2.257745 |
| 柠檬酸 | 28 | .000 | 5.400 | 1.61643 | 1.561794 |
| 多酚氧化酶活力 | 28 | 8.381 | 58.731 | 27.57336 | 13.224419 |
| 褐变度 | 28 | 14.674 | 1167.648 | 219.14632 | 282.598177 |
| DPPH自由基 | 28 | .098 | .449 | .30995 | .089501 |
| 总酚 | 28 | 4.367 | 16.965 | 7.42664 | 2.910340 |
| 单宁 | 28 | 1.672 | 8.506 | 3.74621 | 1.747162 |
| 葡萄总黄酮 | 28 | .744 | 9.526 | 3.79339 | 2.155059 |
| 白藜芦醇 | 28 | .087 | 4.023 | 1.14704 | .965949 |
| 黄酮醇 | 28 | .210 | 50.497 | 5.99373 | 9.391835 |
| 总糖 | 28 | 153.909 | 229.306 | 193.35386 | 22.487085 |
| 还原糖 | 28 | 174.030 | 259.877 | 223.48729 | 24.771494 |
| 可溶性固形物 | 28 | 172.700 | 231.100 | 205.97500 | 17.209679 |
| PH值 | 28 | 3.190 | 3.990 | 3.65000 | .194460 |
| 可滴定酸 | 28 | 3.310 | 8.480 | 5.74393 | 1.593869 |
| 固酸比 | 28 | 22.030 | 59.320 | 38.80964 | 11.490995 |
| 干物质含量 | 28 | 18.295 | 26.534 | 23.34157 | 1.871721 |
| 果穗质量 | 28 | 73.360 | 498.780 | 197.27357 | 96.093614 |
| 百粒质量 | 28 | 88.200 | 892.200 | 197.74643 | 147.519848 |
| 果梗比 | 28 | 2.410 | 6.270 | 3.83393 | .915194 |
| 出汁率 | 28 | 56.000 | 82.800 | 71.29286 | 5.429612 |
| 果皮质量 | 28 | .120 | .373 | .20336 | .059846 |
| L亮度 | 28 | 30.000 | 43.720 | 38.70179 | 3.317537 |
| a红绿 | 28 | -6.070 | 8.430 | -.97607 | 3.869468 |
| b黄蓝 | 28 | 1.820 | 20.260 | 13.20000 | 4.218991 |
| 有效个案数（成列） | 28 |  |  |  |  |

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| --- | --- | --- | --- | --- | --- |
| **初始聚类中心** | | | | | |
|  | 聚类 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 氨基酸 | 2073.330 | 817.810 | 5022.140 | 1554.020 | 3785.570 |
| 蛋白质 | 496.835 | 455.675 | 467.239 | 585.359 | 450.458 |
| VC | .191 | .034 | .171 | .684 | .117 |
| 花色苷 | 1.657 | 2.072 | 2.790 | .819 | 2.057 |
| 酒石酸 | 6.810 | 9.380 | 11.790 | 8.500 | 8.890 |
| 苹果酸 | .000 | 3.710 | 9.630 | 2.240 | 5.050 |
| 柠檬酸 | .090 | 2.450 | .000 | .650 | 3.130 |
| 多酚氧化酶活力 | 18.291 | 30.299 | 12.571 | 24.020 | 46.158 |
| 褐变度 | 14.674 | 27.517 | 43.218 | 1167.648 | 74.477 |
| DPPH自由基 | .300 | .200 | .284 | .253 | .365 |
| 总酚 | 5.816 | 4.725 | 6.972 | 4.367 | 6.567 |
| 单宁 | 5.517 | 2.217 | 2.990 | 1.952 | 4.583 |
| 葡萄总黄酮 | 2.816 | 2.152 | 3.809 | .744 | 3.885 |
| 白藜芦醇 | 1.426 | 1.782 | 1.357 | .845 | 2.921 |
| 黄酮醇 | 4.309 | .854 | 1.633 | .716 | 5.732 |
| 总糖 | 224.841 | 199.147 | 180.595 | 209.266 | 220.079 |
| 还原糖 | 259.877 | 210.105 | 232.429 | 228.364 | 239.325 |
| 可溶性固形物 | 226.400 | 202.200 | 214.900 | 211.400 | 226.600 |
| PH值 | 3.830 | 3.880 | 3.820 | 3.600 | 3.590 |
| 可滴定酸 | 5.290 | 3.410 | 3.820 | 6.880 | 6.000 |
| 固酸比 | 42.830 | 59.320 | 56.200 | 30.730 | 37.760 |
| 干物质含量 | 26.487 | 23.078 | 24.144 | 22.218 | 25.301 |
| 果穗质量 | 104.910 | 165.060 | 213.220 | 92.880 | 108.760 |
| 百粒质量 | 127.900 | 137.400 | 164.200 | 145.500 | 114.400 |
| 果梗比 | 3.850 | 3.060 | 3.740 | 3.660 | 3.570 |
| 出汁率 | 56.000 | 69.200 | 74.400 | 69.600 | 65.500 |
| 果皮质量 | .155 | .213 | .253 | .163 | .146 |
| L亮度 | 40.310 | 30.000 | 37.490 | 39.470 | 42.500 |
| a红绿 | -1.850 | 8.430 | -.830 | -6.070 | -5.310 |
| b黄蓝 | 15.180 | 5.360 | 13.110 | 19.540 | 20.260 |

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| **迭代历史记录a** | | | | | |
| 迭代 | 聚类中心中的变动 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 1 | 189.902 | 322.014 | .000 | 329.976 | 377.233 |
| 2 | 44.132 | 59.879 | .000 | .000 | .000 |
| 3 | 41.039 | 53.846 | .000 | .000 | .000 |
| 4 | .000 | .000 | .000 | .000 | .000 |
| a. 由于聚类中心中不存在变动或者仅有小幅变动，因此实现了收敛。任何中心的最大绝对坐标变动为 .000。当前迭代为 4。初始中心之间的最小距离为 1243.869。 | | | | | |

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| **最终聚类中心** | | | | | |
|  | 聚类 | | | | |
| 1 | 2 | 3 | 4 | 5 |
| 氨基酸 | 2118.801 | 1167.674 | 5022.140 | 1539.570 | 3426.955 |
| 蛋白质 | 515.384 | 480.941 | 467.239 | 538.518 | 540.130 |
| VC | .163 | .371 | .171 | .305 | .135 |
| 花色苷 | 1.252 | 1.925 | 2.790 | .822 | 1.215 |
| 酒石酸 | 7.279 | 7.113 | 11.790 | 6.697 | 7.925 |
| 苹果酸 | 4.147 | 3.027 | 9.630 | 2.737 | 3.840 |
| 柠檬酸 | 2.111 | 1.420 | .000 | .477 | 1.805 |
| 多酚氧化酶活力 | 21.715 | 37.879 | 12.571 | 25.332 | 30.137 |
| 褐变度 | 167.709 | 134.436 | 43.218 | 845.885 | 82.544 |
| DPPH自由基 | .337 | .245 | .284 | .343 | .386 |
| 总酚 | 8.005 | 7.197 | 6.972 | 4.939 | 8.661 |
| 单宁 | 4.007 | 3.222 | 2.990 | 2.576 | 6.545 |
| 葡萄总黄酮 | 3.964 | 3.714 | 3.809 | 1.882 | 5.904 |
| 白藜芦醇 | 1.261 | .931 | 1.357 | .863 | 1.702 |
| 黄酮醇 | 8.527 | 3.551 | 1.633 | 4.809 | 4.473 |
| 总糖 | 202.367 | 174.147 | 180.595 | 195.278 | 224.693 |
| 还原糖 | 234.999 | 196.486 | 232.429 | 245.093 | 233.288 |
| 可溶性固形物 | 209.692 | 192.711 | 214.900 | 211.433 | 228.850 |
| PH值 | 3.650 | 3.658 | 3.820 | 3.567 | 3.655 |
| 可滴定酸 | 6.073 | 5.312 | 3.820 | 5.883 | 6.300 |
| 固酸比 | 37.230 | 40.364 | 56.200 | 36.813 | 36.380 |
| 干物质含量 | 24.151 | 21.509 | 24.144 | 24.013 | 24.919 |
| 果穗质量 | 193.711 | 228.670 | 213.220 | 141.630 | 154.640 |
| 百粒质量 | 179.885 | 252.222 | 164.200 | 141.200 | 170.300 |
| 果梗比 | 3.672 | 4.124 | 3.740 | 4.183 | 3.105 |
| 出汁率 | 69.738 | 74.189 | 74.400 | 71.800 | 66.050 |
| 果皮质量 | .208 | .204 | .253 | .154 | .222 |
| L亮度 | 39.390 | 36.730 | 37.490 | 40.547 | 40.940 |
| a红绿 | -1.501 | 1.308 | -.830 | -3.697 | -3.835 |
| b黄蓝 | 13.828 | 9.994 | 13.110 | 18.203 | 16.080 |

|  |  |  |
| --- | --- | --- |
| **每个聚类中的个案数目** | | |
| 聚类 | 1 | 13.000 |
| 2 | 9.000 |
| 3 | 1.000 |
| 4 | 3.000 |
| 5 | 2.000 |
| 有效 | | 28.000 |
| 缺失 | | .000 |