

# Impact of food processing methods on nutraceutical and anti-nutritional properties of different forms of beetroot: A synergistic approach towards iron deficiency anemia

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| General Factorial Regression: DPPH versus Juice, Residue, Type |    |        |         |            |         |
|----------------------------------------------------------------|----|--------|---------|------------|---------|
| Source                                                         | DF | Adj SS | Adj MS  | F-Value    | P-Value |
| Model                                                          | 11 | 564805 | 51345.9 | 1015109.70 | 0.000   |
| Linear                                                         | 5  | 295647 | 59129.5 | 1168990.38 | 0.000   |
| Juice                                                          | 1  | 5975   | 5975.4  | 118132.93  | 0.000   |
| Residue                                                        | 1  | 88088  | 88088.1 | 1741503.36 | 0.000   |
| Type                                                           | 3  | 139639 | 46546.5 | 920224.07  | 0.000   |
| 2-Way Interactions                                             | 6  | 205618 | 34269.7 | 677511.64  | 0.000   |
| Juice*Type                                                     | 3  | 158751 | 52916.9 | 1046166.93 | 0.000   |
| Residue*Type                                                   | 3  | 45684  | 15227.8 | 301054.54  | 0.000   |
| General Factorial Regression: ABTS versus Juice, Residue, Type |    |        |         |            |         |
| Model                                                          | 11 | 584466 | 53133.3 | 603469.11  | 0.000   |
| Linear                                                         | 5  | 288648 | 57729.6 | 655672.38  | 0.000   |
| Juice                                                          | 1  | 8982   | 8981.8  | 102012.55  | 0.000   |
| Residue                                                        | 1  | 29496  | 29496.2 | 335007.29  | 0.000   |
| Type                                                           | 3  | 215642 | 71880.6 | 816394.18  | 0.000   |

|                                                                                         |    |         |         |           |       |
|-----------------------------------------------------------------------------------------|----|---------|---------|-----------|-------|
| 2-Way Interactions                                                                      | 6  | 360457  | 60076.2 | 682323.85 | 0.000 |
| Juice*Type                                                                              | 3  | 256573  | 85524.2 | 971353.56 | 0.000 |
| Residue*Type                                                                            | 3  | 19806   | 6601.8  | 74981.34  | 0.000 |
| General Factorial Regression: H <sub>2</sub> O <sub>2</sub> versus Juice, Residue, Type |    |         |         |           |       |
| Model                                                                                   | 11 | 267546  | 24322.4 | 339801.31 | 0.000 |
| Linear                                                                                  | 5  | 103677  | 20735.3 | 289687.27 | 0.000 |
| Juice                                                                                   | 1  | 23920   | 23919.6 | 334174.09 | 0.000 |
| Residue                                                                                 | 1  | 1909    | 1909.4  | 26676.34  | 0.000 |
| Type                                                                                    | 3  | 60227   | 20075.6 | 280471.10 | 0.000 |
| 2-Way Interactions                                                                      | 6  | 218412  | 36402.0 | 508562.46 | 0.000 |
| Juice*Type                                                                              | 3  | 193736  | 64578.6 | 902210.47 | 0.000 |
| Residue*Type                                                                            | 3  | 30718   | 10239.4 | 143051.51 | 0.000 |
| General Factorial Regression: TPC versus Juice, Residue, Type                           |    |         |         |           |       |
| Model                                                                                   | 11 | 75139.9 | 6830.9  | 94.12     | 0.000 |
| Linear                                                                                  | 5  | 28580.2 | 5716.0  | 78.76     | 0.000 |
| Juice                                                                                   | 1  | 96.8    | 96.8    | 1.33      | 0.260 |
| Residue                                                                                 | 1  | 10669.2 | 10669.2 | 147.00    | 0.000 |
| Type                                                                                    | 3  | 15580.4 | 5193.5  | 71.56     | 0.000 |
| 2-Way Interactions                                                                      | 6  | 46096.0 | 7682.7  | 105.85    | 0.000 |
| Juice*Type                                                                              | 3  | 33144.6 | 11048.2 | 152.22    | 0.000 |
| Residue*Type                                                                            | 3  | 14443.3 | 4814.4  | 66.33     | 0.000 |
| General Factorial Regression: TFC versus Juice, Residue, Type                           |    |         |         |           |       |
| Model                                                                                   | 11 | 361320  | 32847.3 | 800.02    | 0.000 |
| Linear                                                                                  | 5  | 183610  | 36721.9 | 894.39    | 0.000 |
| Juice                                                                                   | 1  | 1355    | 1354.9  | 33.00     | 0.000 |
| Residue                                                                                 | 1  | 70      | 70.0    | 1.70      | 0.204 |
| Type                                                                                    | 3  | 181299  | 60433.1 | 1471.89   | 0.000 |
| 2-Way Interactions                                                                      | 6  | 65458   | 10909.7 | 265.71    | 0.000 |

|                                                                    |    |         |         |           |       |
|--------------------------------------------------------------------|----|---------|---------|-----------|-------|
| Juice*Type                                                         | 3  | 12239   | 4079.7  | 99.36     | 0.000 |
| Residue*Type                                                       | 3  | 59065   | 19688.4 | 479.52    | 0.000 |
| General Factorial Regression: Saponin versus Juice, Residue, Type  |    |         |         |           |       |
| Model                                                              | 11 | 756.97  | 68.816  | 145.73    | 0.000 |
| Linear                                                             | 5  | 687.51  | 137.503 | 291.18    | 0.000 |
| Juice                                                              | 1  | 170.67  | 170.667 | 361.41    | 0.000 |
| Residue                                                            | 1  | 155.04  | 155.042 | 328.32    | 0.000 |
| Type                                                               | 3  | 470.13  | 156.708 | 331.85    | 0.000 |
| 2-Way Interactions                                                 | 6  | 122.39  | 20.398  | 43.20     | 0.000 |
| Juice*Type                                                         | 3  | 57.00   | 19.000  | 40.24     | 0.000 |
| Residue*Type                                                       | 3  | 91.13   | 30.375  | 64.32     | 0.000 |
| General Factorial Regression: Nitrates versus Juice, Residue, Type |    |         |         |           |       |
| Model                                                              | 11 | 634.833 | 57.712  | 2579.39   | 0.000 |
| Linear                                                             | 5  | 302.102 | 60.420  | 2700.43   | 0.000 |
| Juice                                                              | 1  | 95.940  | 95.940  | 4287.95   | 0.000 |
| Residue                                                            | 1  | 24.675  | 24.675  | 1102.81   | 0.000 |
| Type                                                               | 3  | 206.155 | 68.718  | 3071.31   | 0.000 |
| 2-Way Interactions                                                 | 6  | 387.297 | 64.550  | 2884.99   | 0.000 |
| Juice*Type                                                         | 3  | 33.246  | 11.082  | 495.30    | 0.000 |
| Residue*Type                                                       | 3  | 357.710 | 119.237 | 5329.17   | 0.000 |
| General Factorial Regression: Betanins versus Juice, Residue, Type |    |         |         |           |       |
| Model                                                              | 11 | 5070.40 | 460.945 | 160019.61 | 0.000 |
| Linear                                                             | 5  | 2867.57 | 573.514 | 199098.51 | 0.000 |
| Juice                                                              | 1  | 249.23  | 249.228 | 86520.86  | 0.000 |
| Residue                                                            | 1  | 609.13  | 609.135 | 211464.24 | 0.000 |
| Type                                                               | 3  | 1203.58 | 401.193 | 139276.16 | 0.000 |
| 2-Way Interactions                                                 | 6  | 1016.52 | 169.420 | 58814.93  | 0.000 |
| Juice*Type                                                         | 3  | 99.59   | 33.197  | 11524.50  | 0.000 |
| Residue*Type                                                       | 3  | 767.73  | 255.912 | 88841.06  | 0.000 |

| General Factorial Regression: Vulgaxanthin versus Juice, Residue, Type  |    |         |         |          |       |
|-------------------------------------------------------------------------|----|---------|---------|----------|-------|
| Model                                                                   | 11 | 5317.00 | 483.364 | 17290.43 | 0.000 |
| Linear                                                                  | 5  | 3172.30 | 634.460 | 22695.32 | 0.000 |
| Juice                                                                   | 1  | 299.49  | 299.485 | 10712.91 | 0.000 |
| Residue                                                                 | 1  | 566.87  | 566.870 | 20277.56 | 0.000 |
| Type                                                                    | 3  | 1467.79 | 489.262 | 17501.43 | 0.000 |
| 2-Way Interactions                                                      | 6  | 937.97  | 156.329 | 5592.04  | 0.000 |
| Juice*Type                                                              | 3  | 83.97   | 27.991  | 1001.27  | 0.000 |
| Residue*Type                                                            | 3  | 620.40  | 206.801 | 7397.49  | 0.000 |
| General Factorial Regression: Ascorbic acid versus Juice, Residue, Type |    |         |         |          |       |
| Model                                                                   | 11 | 128.475 | 11.6796 | 6727.43  | 0.000 |
| Linear                                                                  | 5  | 60.697  | 12.1393 | 6992.24  | 0.000 |
| Juice                                                                   | 1  | 6.934   | 6.9337  | 3993.84  | 0.000 |
| Residue                                                                 | 1  | 1.426   | 1.4259  | 821.34   | 0.000 |
| Type                                                                    | 3  | 53.743  | 17.9143 | 10318.62 | 0.000 |
| 2-Way Interactions                                                      | 6  | 20.402  | 3.4004  | 1958.63  | 0.000 |
| Juice*Type                                                              | 3  | 6.505   | 2.1682  | 1248.88  | 0.000 |
| Residue*Type                                                            | 3  | 8.181   | 2.7270  | 1570.78  | 0.000 |
| General Factorial Regression: citric acid versus Juice, Residue, Type   |    |         |         |          |       |
| Model                                                                   | 11 | 22331.9 | 2030.17 | 75.04    | 0.000 |
| Linear                                                                  | 5  | 8557.7  | 1711.54 | 63.27    | 0.000 |
| Juice                                                                   | 1  | 1664.0  | 1664.03 | 61.51    | 0.000 |
| Residue                                                                 | 1  | 846.1   | 846.12  | 31.28    | 0.000 |
| Type                                                                    | 3  | 6792.9  | 2264.31 | 83.70    | 0.000 |
| 2-Way Interactions                                                      | 6  | 5289.4  | 881.57  | 32.59    | 0.000 |
| Juice*Type                                                              | 3  | 608.1   | 202.69  | 7.49     | 0.001 |
| Residue*Type                                                            | 3  | 3932.9  | 1310.98 | 48.46    | 0.000 |
| General Factorial Regression: iron versus Juice, Residue, Type          |    |         |         |          |       |
| Model                                                                   | 11 | 178.610 | 16.2373 | 295.01   | 0.000 |

|                                                                         |    |         |         |        |       |
|-------------------------------------------------------------------------|----|---------|---------|--------|-------|
| Linear                                                                  | 5  | 125.484 | 25.0969 | 455.98 | 0.000 |
| Juice                                                                   | 1  | 1.826   | 1.8260  | 33.18  | 0.000 |
| Residue                                                                 | 1  | 0.993   | 0.9931  | 18.04  | 0.000 |
| Type                                                                    | 3  | 123.521 | 41.1737 | 748.07 | 0.000 |
| 2-Way Interactions                                                      | 6  | 7.336   | 1.2226  | 22.21  | 0.000 |
| Juice*Type                                                              | 3  | 2.720   | 0.9068  | 16.48  | 0.000 |
| Residue*Type                                                            | 3  | 6.162   | 2.0539  | 37.32  | 0.000 |
| General Factorial Regression: folate versus Juice, Residue, Type        |    |         |         |        |       |
| Model                                                                   | 11 | 510.31  | 46.391  | 83.50  | 0.000 |
| Linear                                                                  | 5  | 327.89  | 65.578  | 118.04 | 0.000 |
| Juice                                                                   | 1  | 130.67  | 130.667 | 235.20 | 0.000 |
| Residue                                                                 | 1  | 104.17  | 104.167 | 187.50 | 0.000 |
| Type                                                                    | 3  | 170.33  | 56.778  | 102.20 | 0.000 |
| 2-Way Interactions                                                      | 6  | 95.56   | 15.926  | 28.67  | 0.000 |
| Juice*Type                                                              | 3  | 16.33   | 5.444   | 9.80   | 0.000 |
| Residue*Type                                                            | 3  | 44.83   | 14.944  | 26.90  | 0.000 |
| General Factorial Regression: Beta carotene versus Juice, Residue, Type |    |         |         |        |       |
| Model                                                                   | 11 | 662.97  | 60.270  | 127.63 | 0.000 |
| Linear                                                                  | 5  | 431.51  | 86.303  | 182.76 | 0.000 |
| Juice                                                                   | 1  | 155.04  | 155.042 | 328.32 | 0.000 |
| Residue                                                                 | 1  | 96.00   | 96.000  | 203.29 | 0.000 |
| Type                                                                    | 3  | 259.46  | 86.486  | 183.15 | 0.000 |
| 2-Way Interactions                                                      | 6  | 109.28  | 18.213  | 38.57  | 0.000 |
| Juice*Type                                                              | 3  | 26.13   | 8.708   | 18.44  | 0.000 |
| Residue*Type                                                            | 3  | 48.67   | 16.222  | 34.35  | 0.000 |
| General Factorial Regression: Oxalates versus Juice, Residue, Type      |    |         |         |        |       |
| Model                                                                   | 11 | 36551.0 | 3322.8  | 19.75  | 0.000 |
| Linear                                                                  | 5  | 26223.0 | 5244.6  | 31.17  | 0.000 |
| Juice                                                                   | 1  | 1014.0  | 1014.0  | 6.03   | 0.022 |

|                                                                   |    |         |         |          |       |
|-------------------------------------------------------------------|----|---------|---------|----------|-------|
| Residue                                                           | 1  | 1326.1  | 1326.1  | 7.88     | 0.010 |
| Type                                                              | 3  | 24649.0 | 8216.3  | 48.83    | 0.000 |
| 2-Way Interactions                                                | 6  | 3774.3  | 629.0   | 3.74     | 0.000 |
| Juice*Type                                                        | 3  | 1590.5  | 530.2   | 3.15     | 0.043 |
| Residue*Type                                                      | 3  | 830.4   | 276.8   | 1.64     | 0.205 |
| General Factorial Regression: Tannin versus Juice, Residue, Type  |    |         |         |          |       |
| Model                                                             | 11 | 872790  | 79345   | 18488.06 | 0.000 |
| Linear                                                            | 5  | 581614  | 116323  | 27104.36 | 0.000 |
| Juice                                                             | 1  | 8759    | 8759    | 2040.99  | 0.000 |
| Residue                                                           | 1  | 56648   | 56648   | 13199.57 | 0.000 |
| Type                                                              | 3  | 464704  | 154901  | 36093.51 | 0.000 |
| 2-Way Interactions                                                | 6  | 57223   | 9537    | 2222.27  | 0.000 |
| Juice*Type                                                        | 3  | 34329   | 11443   | 2666.35  | 0.000 |
| Residue*Type                                                      | 3  | 10801   | 3600    | 838.89   | 0.000 |
| General Factorial Regression: Calcium versus Juice, Residue, Type |    |         |         |          |       |
| Model                                                             | 11 | 176.568 | 16.0517 | 245.76   | 0.000 |
| Linear                                                            | 5  | 104.805 | 20.9609 | 320.92   | 0.000 |
| Juice                                                             | 1  | 14.527  | 14.5268 | 222.41   | 0.000 |
| Residue                                                           | 1  | 1.769   | 1.7686  | 27.08    | 0.000 |
| Type                                                              | 3  | 76.319  | 25.4398 | 389.50   | 0.000 |
| 2-Way Interactions                                                | 6  | 136.600 | 22.7667 | 348.57   | 0.000 |
| Juice*Type                                                        | 3  | 84.643  | 28.2145 | 431.98   | 0.000 |
| Residue*Type                                                      | 3  | 98.198  | 32.7328 | 501.16   | 0.000 |