Supplementary Material S1. Estimated marginal means plots for aloenin (A), total flavonoids (B) and total non-anthraquinones (C).
**Supplementary Material S2.** Retention time (Rt), wavelengths of maximum absorption in the visible region (λ\text{max}), mass spectral data, and tentative identification of the phenolic compounds present in the hydroethanolic extracts of the different nutraceutical formulations.

| Peak | Rt (min) | λ\text{max} (nm) | [M-H]\text{+} (m/z) | MS\text{2} (m/z) | Tentative identification |
|------|----------|-------------------|---------------------|-----------------|-------------------------|
| 1    | 11.46    | 310               | 337                 | 191(100),173(5),163(11),135(5) | cis 4-O-p-coumaryloquinic acid |
| 2    | 12.55    | 310               | 337                 | 191(100),173(5),163(15),135(6) | trans 4-O-p-coumaryloquinic acid |
| 3    | 13.74    | 343               | 579                 | 459(85),429(100),357(30),327(3),309(13) | 2"-O-pentoside-8-C-hexoside-luteolin |
| 4    | 14.66    | 348               | 593                 | 473(100),431(14),311(10) | Apigenin-6,8-C-diglucoside |
| 5    | 15.43    | 344               | 593                 | 473(100),431(14),311(10) | Apigenin-C-hexoside-C-hexoside |
| 6    | 16.05    | 297               | 409                 | 247(100) | Aloenin |
| 7    | 17.56    | 271/344           | 577                 | 457(7),413(100),341(5),311(5),293(29) | Apigenin-2"-O-rhamnose-C-hexoside |
| 8    | 18.39    | 271/344           | 607                 | 443(100),295(30),169(80),125(15) | 4-(4'-Hydroxyphenyl)-2-butanone-4'-O-β-D-(2"-O-cinnamoyl-6"-O-galloyl)glucopyranoside |
| 9    | 24.22    | 220/269/298/354   | 417                 | 297(100),255(5) | Aloin B (isobarbaloin) |
| 10   | 25.99    | 220/269/298/354   | 417                 | 297(100),255(5) | Aloin A (barbaloin) |
| 11   | 27.86    | 252/301           | 553                 | 407(100),375(5),347(14)275(47),259(3),233(4),191(2) | 2"-p-methoxycoumaroyl aloesin |
| 12   | 28.88    | 244/301           | 583                 | 407(100),389(30),243(5) | 7-methylether of 2'-feruloylaloesin malonyl-4,5-O-dicaffeoylquinic acid |