The Effect of *Lactobacillus plantarum* ATCC 8014 and *Lactobacillus acidophilus* NCFM Fermentation on Antioxidant Properties of Selected *in vitro* Sprout Culture of *Orthosiphon aristatus* (Java Tea) as a Model Study

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**Supplementary Information**

**Table S1.** Recent investigations on plant fermentation and its effect on antioxidant properties.

| Plant | Condition of fermentation | Results |
|-------|---------------------------|---------|
| White cabbage *(Brassica oleracea var. capitata cv. Megaton)* [1]. | *L. plantarum* CECT 748, *Leuconostoc mesenteroides* CECT 219 or a mixed culture of both strains. | Phe, FD, FL, AA |
| | Increased significantly *(p < 0.05)*; e.g. oats water sub fraction from 1,580.1 ± 62.6 mg GAE/100 g DW (un-fer.) to 3,632.7 ± 73.1 mg GAE/100 g DW *(fer. with A. oryzae).* | Increased significantly *(p < 0.05)*; e.g. *Oats ethyl acetate sub fraction from 3,714.8 ± 94.3 mg of rutin equivalents/100 g DW (un-fer.) to 7,893.1 ± 397.3 mg of rutin equivalents/100 g DW *(fer. with A. oryzae).* | Increased significantly *(p < 0.05)*; e.g. *Oats ethyl acetate sub fraction from 747.5 ± 14.6 micromoles of Trolox per gram of DW (un-fer.) to 1,687.9 ± 40.7 (fer. with *A. oryzae*). |
| Oats *(Avena sativa L.)* [2]. | SSF with *A. oryzae var. effuses, A oryzae,* and *A niger* on four subfractions of oats: n-hexane, ethyl acetate, n-butanol, and water with ethanol as solvent extractions. | NA | NA | NA |

Oxygen radical absorbance capacity (ORAC) values (up to 2-fold) and NO production inhibitory potency (up to 2.6-fold).
| Plant                              | Condition of fermentation                                                                 | Results                                                                 |   |
|-----------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---|
| Soybean [3]                       | The steamed soybeans were let stand for 1 h at 37 °C to cool down. After, the cooked soybeans were inoculated with 5% (w/w) strain *Bacillus subtilis* CS90 (1.43 × 10⁷ cfu/mL) and fermented for 60 h at 37 °C in incubator and sampled at 0, 12, 24, 36, 48, and 60 h. | Increased from 53.43 mg/kg (0 h) to 9,414 mg/kg at the end of fermentation (60 h). |   |
|                                   |                                                                                          | Total flavonols increased (data divided into different type flavonols although flavanol gallates contents decreased) |   |
| Anoectochilus formosanus Hayata [4]| 5×10⁷ cfu/mL *L. acidophilus* BCRC 17002, *Bifidobacterium longum* BCRC 14602, *L. casei* subsp. *Casei* BCRC 12248 was inoculated into 100 mL vegetable juice. | Increased; e.g. leaf (un-fer.) 6.07±1.0 and fermented 14.05±1.0 mg/g. | NA |
|                                   |                                                                                          | NA                                                                      | NA |
| Spirulina *Arthrospira platensis*  [5]| *B. bifidum*, *L. casei*, *B. infantis*, *B. longum*, *Lactococcus lactis* and *L.acidophilus*. | The results of their study indicated that LAB-fermented Spirulina contained more polyphenols. | NA |
| Graftopetalum paraguayense E. Walther [6]| *L. acidophilus* BCRC 10695, *L. plantarum* BCRC 10357 and *L. paracasei* BCRC 14023. | Increased: e.g. water extract of immature *G. paraguayense* E. Walther fermentation by *L. plantarum* BCRC 10357 increased from 17.2 to 22.9 µg/mg. | NA |
|                                   |                                                                                          | The level of antioxidants was significantly increased in immature *G. paraguayense* E. Walther fermented by *L. acidophilus* BCRC 10695, *L. plantarum* BCRC 10357 and *L. paracasei* BCRC 14023. |   |
| Plant                        | Condition of fermentation                                      | Results                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| **Codonopsis lanceolata [7]** | **Bifidobacterium longum B6 and L. rhamnosus GG.**          | **Phe** | Unlike the total phenols, fermentation decreased the total flavonoids. The lowest flavonoid contents were observed for high pressure assisted extraction of the fermented **C. lanceolata** with **B. longum** (0.44 mg RE/g) and **L. rhamnosus** (0.45 mg RE/g). The high pressure assisted extraction of un-fermented samples showed a maximum flavonoid content of 1.30 mg RE/g, followed by conventional extraction of un-fermented sample (0.78 mg RE/g). |
|                             | The fermentation process significantly increased the total phenol content of **C. lanceolata** when compared to the conventional extraction without fermentation. The total phenol content of **C. lanceolata** was the highest for high pressure assisted extraction from **L. rhamnosus** fermented (8.45 mg GAE/g), followed by **B. longum** fermented samples (8.25 mg GAE/g), non-fermented (7.38 mg GAE/g), and conventional extraction without fermentation (6.69 mg GAE/g). | **FD** | NA | The lowest IC<sub>50</sub> values were 1.25 mg/mL for high pressure assisted extraction of **B. longum** fermented sample and 1.18 mg/mL for **L. rhamnosus** fermented sample, indicating that the fermented **C. lanceolata** extract had the highest antioxidant properties. |

**Phe** = total phenolics; **FD** = total flavonoids; **FL** = total flavonols; and AA: antioxidant activity; SSF = solid state fermentations; and LSF = liquid state fermentations.

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