# Supplementary Information

# Development and Characterization of Gellan Gum Microspheres for the Controlled Release of Antioxidants from *Vaccinium myrtillus* Extract

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**Calibration curves**

*Total polyphenol content (PHCs)*

The total PHCs content was measured using the Folin-Ciocalteau method as described in paragraph 2.3. The calibration curve was obtained using quercetin as the reference standard and is reported in Figure S1.

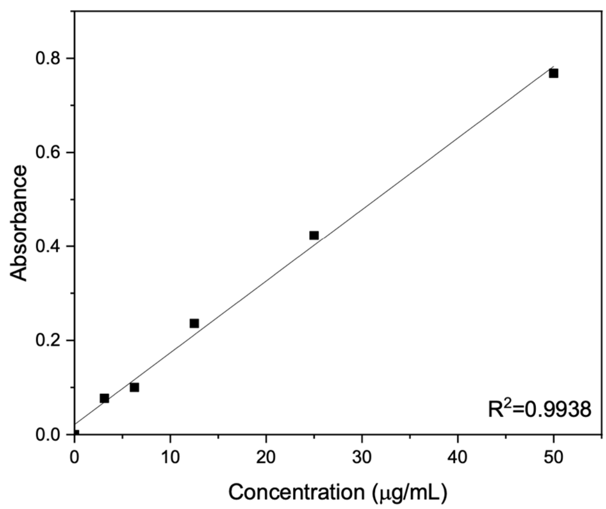


**Figure S1** - Calibration Curve with Quercetin for Total Polyphenol Content (λ= 765nm)

*Total flavonoid content*

The total flavonoid content was determined using a colorimetric method based on the quantification of non-anthocyanic total flavonoids and total anthocyanins by UV-Visible spectrophotometry described in paragraph 2.3. The calibration curve was obtained using quercetin as the reference standard and is reported in Figure S2.

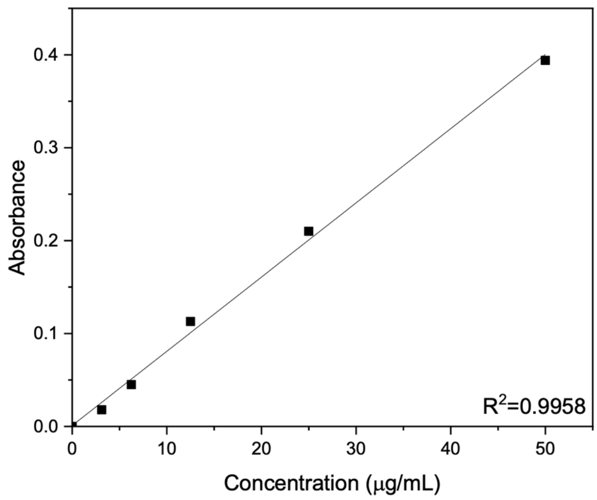


**Figure S2** Calibration Curve with Quercetin for Total Flavonoid Content (λ= 415 nm)

*Total anthocyanin content*

The total anthocyanin content was determined using the procedure described in paragraph 2.3. The calibration curve was obtained using cyanidin as the reference standard and is reported in Figure S3.

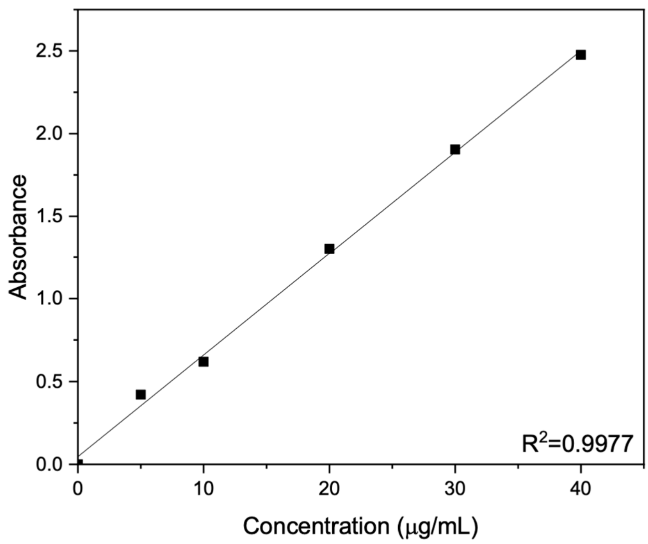


**Figure S3** Calibration Curve with Cyanidin for Total Anthocyanin Content (λ= 515nm)

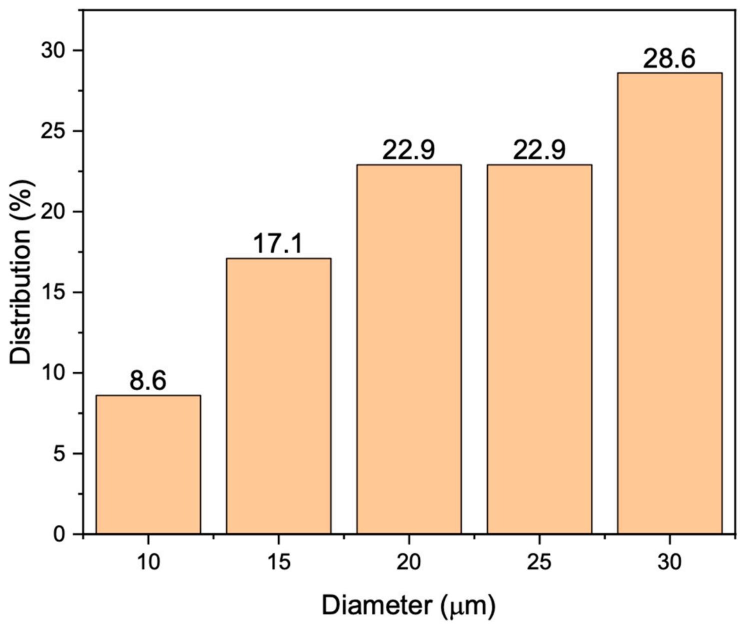


**Figure S4**. Microspheres size distribution histogram of dry G-MPs ($n$ = 35), obtained from optical microscopy measurements.

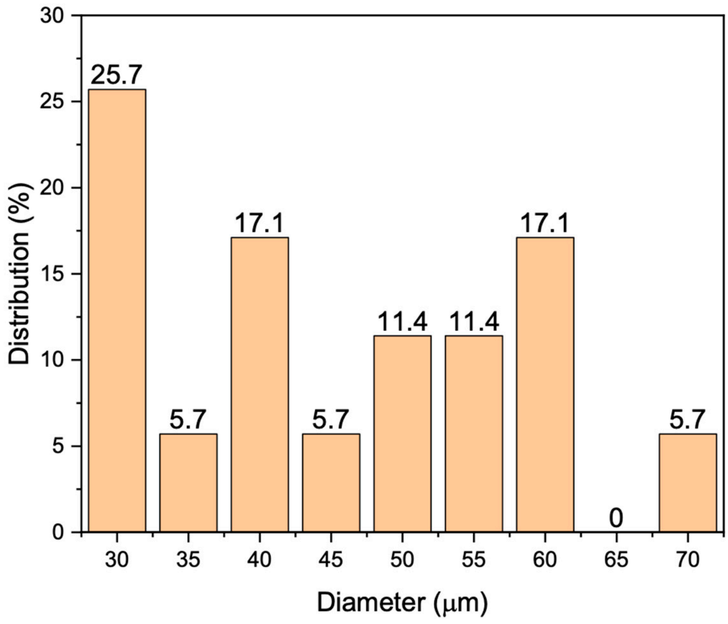


**Figure S5.** Microspheres size distribution histogram of hydrated G-MPs ($n$ = 35), obtained from optical microscopy measurements.

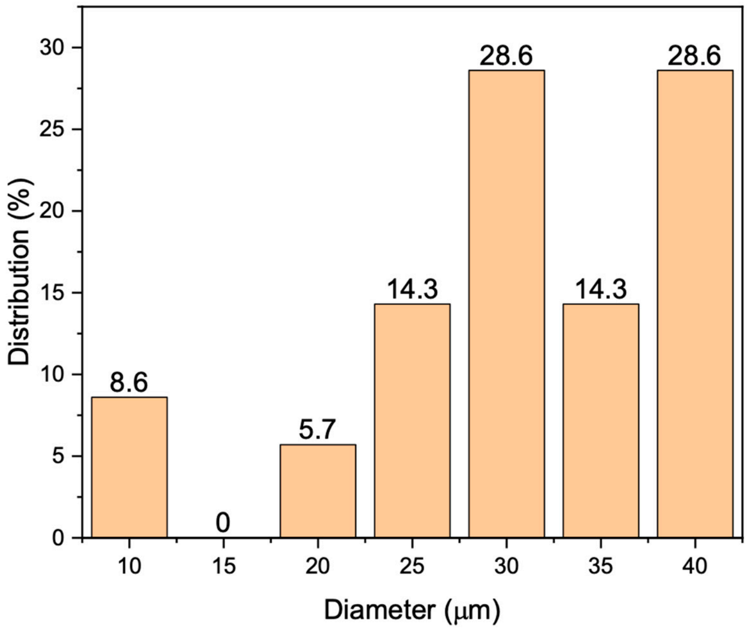


**Figure S6.** Microspheres size distribution histogram of dry G-MPs-BEX (*n* = 35).

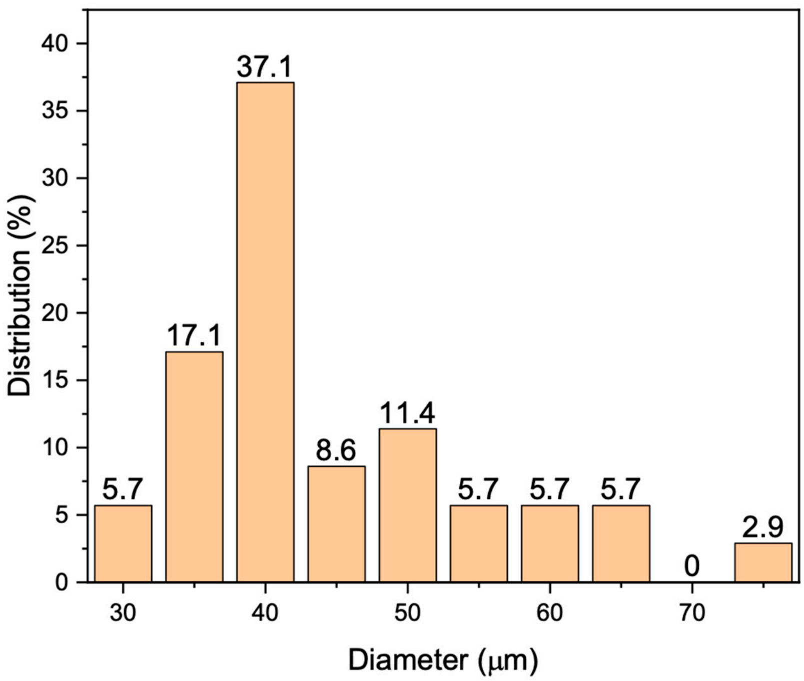


**Figure S7**. Microspheres size distribution histogram of hydrated G-MPs-BEX (*n* = 35).

**Table S1.** ANOVA Results related to DPPH radical scavenging activity (%) measured under different experimental conditions, including different incubation times, BEX concentrations, and storage times of G-MPs-BEX.

| Condition | Group | Scavenger activity (%) |
| --- | --- | --- |
| **Time (days)** | 0 | 65 ± 5[a] |
| | 23 | 72 ± 1.5[a] |
| | 60 | 63 ± 5[a] |
| **BEX Concentration** | 1000 μg/mL | 65 ± 4.6[a] |
| | 100 μg/mL | 34 ± 3.6[b] |
| | 50 μg/mL | 32 ± 3[b] |
| | 25 μg/mL | 28 ± 3[b] |
| **G-MPs-BEX** | Day 0 – 5 min | 60 ± 5[a] |
| | Day 0 – 120 min | 62 ± 3[a] |
| | Day 23 – 5 min | 64 ± 3[a] |
| | Day 23 – 120 min | 61 ± 4[a] |

The reported value is an average of three different measurements, along with their corresponding standard deviation. Superscript letters (a, b) indicate statistically significant differences among samples within the same experimental test, as determined by one-way ANOVA ($p < 0.05$). Samples sharing the same letter are not significantly different.