Supporting Information (SI)

Quillaja Saponin-Based Hollow Salt Particles as Solid Carriers for Enhancing Aroma Sensory with Reduced Sodium Intake

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Sensory Scores of Overall Aroma.

Quantitative descriptive analysis (QDA) was applied to evaluate the differences of sensory aroma characteristics among samples.[1] The intensity of the sensory attributes of the water, lemon oil and garlic oil was evaluated in triplicate by a trained panel of 11 subjects (6 female and 5 male, aged 18-36 years). The judges scored each attribute on a line scale of 0-100, in which 100 was the lemon oil/garlic oil (strongly perceivable) and 0 was the water with no perception. Samples with in flavor oil effective content of 0.2 g were marked with three-digit numbers, subsequently put in a plastic cup (20 mL) and covered with lids, prior to serving for evaluation.

Table S Sensory descriptors with their definitions and references.

Descriptor	Definition	Reference	Consensus value of reference on 0–10 scale
Saltiness	Characteristic taste of NaCl	2.5% (w/w) table salt solution	10
Lemon aroma	Aroma and flavor characteristic associated with lemon	0.2% (w/w) lemon oil solution of sunflower oil	10
Garlic aroma	Aroma and flavor characteristic associated with garlic	0.2% (w/w) garlic oil solution of sunflower oil	10
French fries odor	Intensity of aroma and flavor of fried fries	Fries fried in sunflower oil that had been heated to 180°C for 4 min. Served at room temperature	7
Fried peanut odor	Intensity of aroma and flavor of fried peanut	Peanut fried in sunflower oil that had been heated to 180°C for 4 min. Served at room temperature	7
Dispersibility	Ability of salt to separate into individual particles	Serious aggregation	0
		Dispersion very good	10
Oral grainy	Grainy perceived in the oral cavity due to the salt present on the sample	Conventional salt	10
		Oil powder	0

Fig. S1 Reconstitution behavior of normal salt (upper layer), hollow salt from table salt and QS (middle layer) and hollow salt from table salt and QS-coated nanodroplets (lower layer), running 50 mg of powder dissolution in 10 g of water at room temperature (~25 °C) for 10, 20, 30 and 60 s, and final dispersions by gentle shaking.

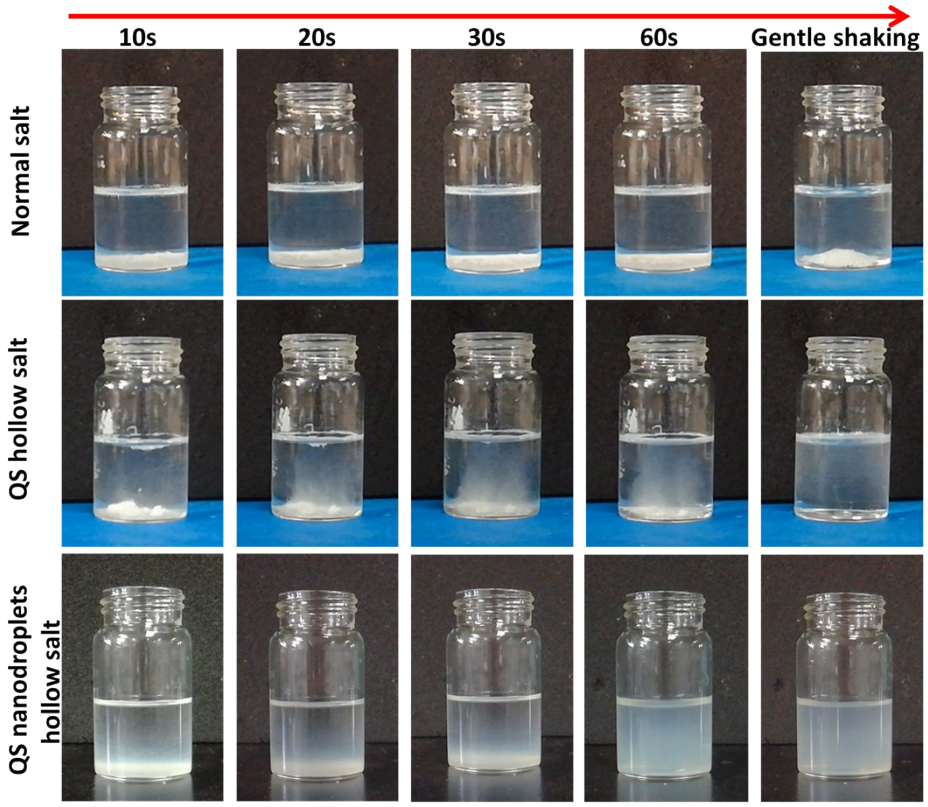


Fig. S2 SEM images of normal salt (a) and the salt produced by spray drying of 25% salt (b).

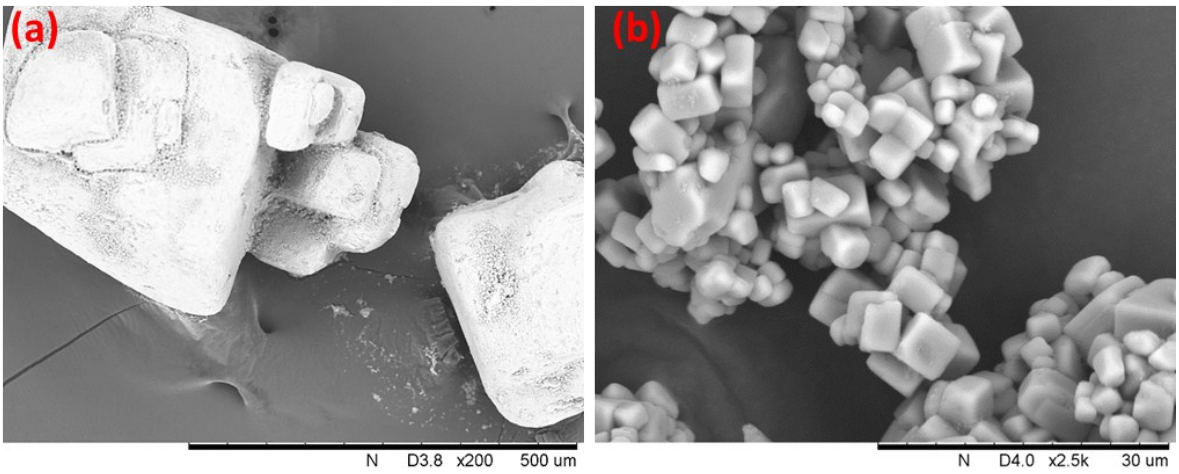


Fig. S3 Typical energy-dispersive X-ray spectroscopy (EDS) spectra of normal salt (a), and hollow

salt particles (b).

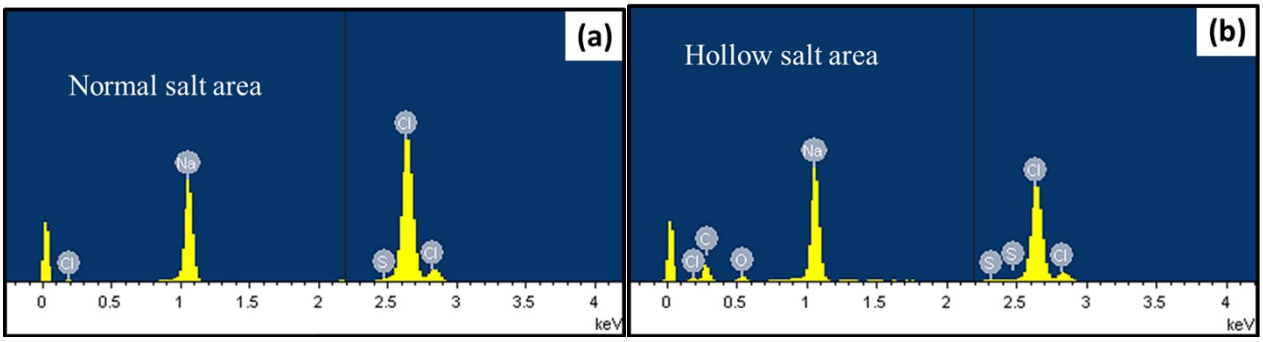
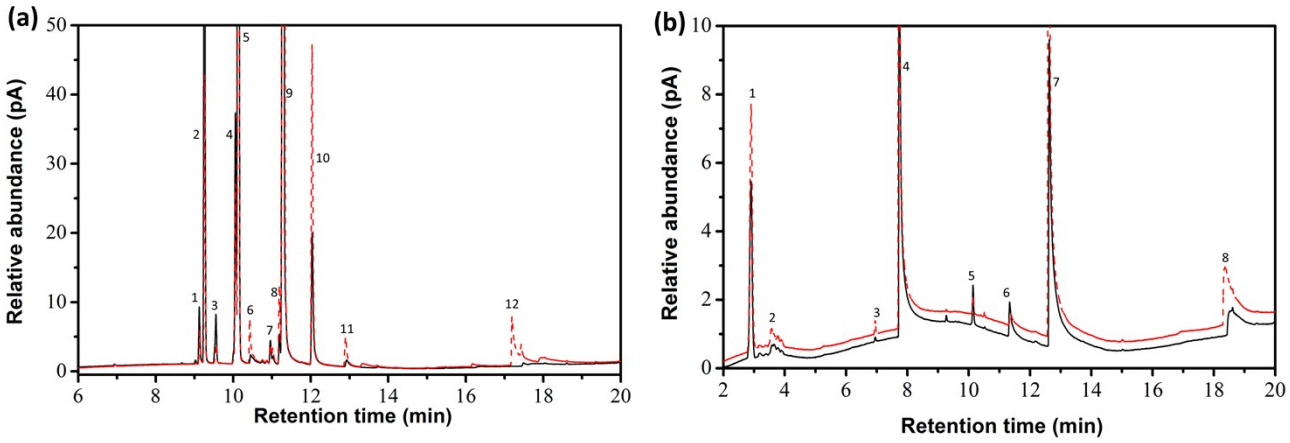


Fig. S4 Typical analytical-ion chromatogram for the HP-GC-FID of lemon oil (a) and garlic oil (b). The individual compounds were identified by both MS-library searches and authentic external standards. Peak numbers correspond to component numbers in Table 2 and Table 3.



Related references:

H. Stone, R. Bleibaum and H.A. Thomas, Sensory evaluation practices. 4th ed. *London: Academic Press*. 2012, p 250-274.