

Table 3 Optimization for conventional white tea extraction

| Extraction methods   | White tea to liquid ratio   | Conditions  | Results   | Reference                    |
|--|---|---|---|------------------------------|
| Aqueous extraction (brewing)   | 2 g tea leaves or a tea bag and 150 mL mineral water                | 60 °C-98 °C, 3-15 min   | Brewing at 98 °C for 7 min was the best condition to obtain a high content of antioxidant polyphenols and pleasant sensory properties   | Pérez-Burillo et al., 2018   |
|  | 0.5 g tea and 20 mL mineral water                                   | Cold tea: 20 °C-25 °C, 120 min; Hot tea: 70 °C, 7 min   | The cold infusion contained more bioactive compounds than the hot tea   | Damiani et al., 2014         |
|  | 0.5 g whole or milled tea leaves and 20 mL mineral water            | Cold tea: 20 °C-25 °C, 15-120 min; Hot tea: 70 °C or 90 °C, 7 min                                       | For whole tea leaves, the brewing conditions to reach the highest antioxidant activity was 120 min for cold tea and 90 °C for hot tea; Tea infusions prepared from milled leaves had the greatest antioxidant activity but a more bitter and astringent taste | Castiglioni et al., 2015     |
|  | Tea g to pure water at ratios from 1:30 to 1:60                     | 80 °C-100 °C, 3-7 min   | Brewing at 100 °C for 7 min and water ratio of 1:30 extracted the most active compounds; Brewing at 100 °C for 3 min and water ratio of 1:50 produced tea with the best sensory qualities   | Zhang et al., 2017b          |
|  | 1 g tea and 10 mL distilled water                                   | 98 °C, 5 min  | The antioxidant properties of the six categories of teas tested were in decreasing order of green, yellow, oolong, black, dark, and white tea   | Zhao et al., 2019            |
|  | 5 g tea and 500 mL distilled water                                  | 65 °C-95 °C, 5-240 min  | With elevated temperature, the extraction rate of each substance was accelerated in the first 50 min  | Lin et al., 2017             |
|  | 2 g tea and 100 mL distilled water                                  | 28 or 100 °C, 5 min or 2 h  | Antioxidant properties were affected by time but not temperature  | Hajiaghaalipour et al., 2016 |
|  | 2 g tea and 200 mL distilled water with or without 5 mL lemon juice | 80 °C, 5-30 min   | The extraction of phenolics from white tea by water was accelerated by lemon juice; There was no significant difference in phenolic content between white and green tea extracts after 5 min  | Rusak et al., 2008           |
| Hot extraction: 2 g tea and 100 mL distilled water, magnetic stirring; Cold extraction: 0.5 g tea and 20 mL distilled water, stirred manually every 30 min | 80 °C, 450 s (hot extraction); 20 °C-25 °C, 2 h (cold extraction)   | The cold extraction resulted in a beverage with more total phenolic compounds but less total flavonoids | de Carvalho Rodrigues et al., 2015  |                              |

Continued Table 3

| Extraction methods | White tea to liquid ratio   | Conditions  | Results  | Reference              |
|--------------------|---|---|--|------------------------|
| Solvent extraction | 2 g tea and 200 mL ethanol<br>10%-70%   | 80 °C, 5-30 min   | Ethanol at 40% was the most effective among the solvents tested in the prolonged extraction of catechins, especially in the extraction of EGCG   | Rusak et al., 2008     |
|                    | Ethanol infusion  | 0-100%<br>40 °C-90 °C, 5-90 min                                 | The best conditions to maximize the extraction of total polyphenols were ethanol at 50% for 47.5 min; Although the yield of polyphenols was optimal at 65 °C, the maximum antioxidant capacity was achieved at 90 °C | Peiró et al., 2014     |
|                    | 100 mg ground tea and 0.5 mL extracting solutions, including methanol, methanol:water 1:1 (v:v), methanol:acetonitrile 1:1 (v:v), ethanol, ethanol:acetonitrile 1:1 (v:v) and water | 32 °C, 21 min with ultrasonication                              | Methanol possessed the highest extraction efficiency of volatile components  | Sereshti et al., 2013  |
|                    | 1 g tea and 50 mL ethanol solution 10%-30%  | 30 °C-70 °C, 5-15 min   | Optimum conditions were 10 min, 66 °C and 30% ethanol solution   | Zielinski et al., 2016 |
|                    | 0.5 g tea and 5 mL solvents ethanol, methanol, and ethanol/methanol combination   | 5-15 min, with various ultrasound intensities 40%, 70% and 100% | Optimal conditions were 70% sonication intensity, 15 min, and methanol as the solvent  | Ahmadi et al., 2022    |