



INFOGRAPHIC

ẢNH HƯỞNG CỦA DUNG MÔI TRÍCH LY VÀ CHẤT MANG ĐẾN MỘT SỐ ĐẶC TÍNH HOÁ LÝ VÀ HOẠT TÍNH CHỐNG OXY HOÁ CỦA BỘT TRÀ HOÀ TAN TỪ GỪNG LÃO HOÁ NHIỆT

Tác giả:

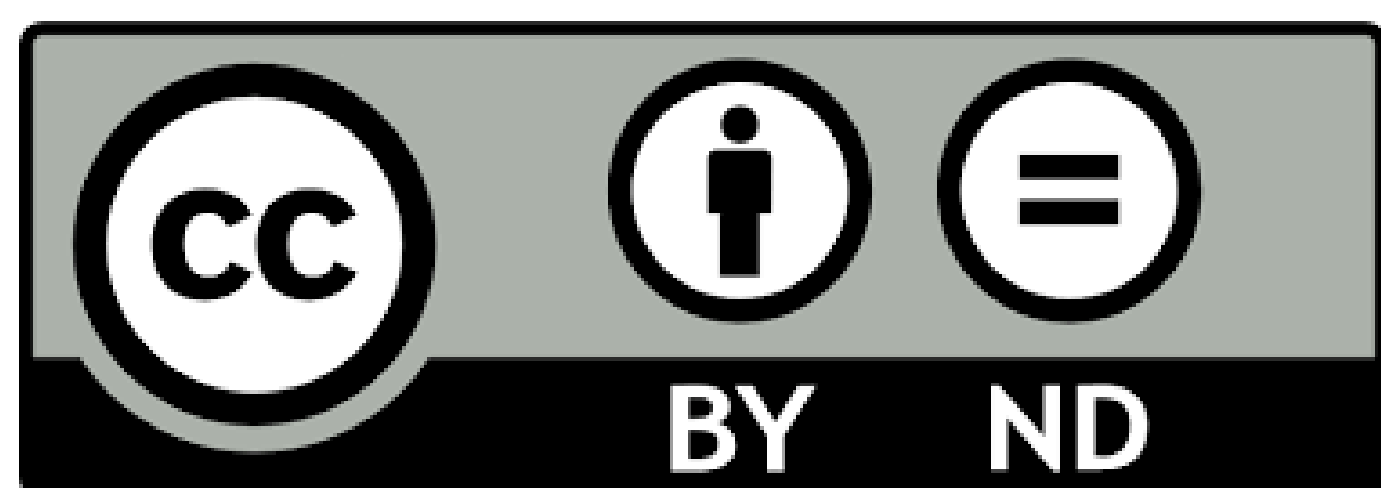
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Đơn vị:

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Ảnh hưởng của dung môi trích ly và chất mang đến một số đặc tính hoá lý và hoạt tính chống oxy hoá của bột trà hoà tan từ gừng lão hoá nhiệt © 2026 bởi **Võ Lan Anh** được cấp phép theo **CC BY-ND 4.0**.

EFFECTS OF PROCESSING PARAMETERS ON THE PHYSICOCHEMICAL PROPERTIES AND BIOACTIVE COMPOUND STABILITY OF INSTANT TEA PRODUCED FROM THERMALLY AGED GINGER

ABSTRACT

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Ginger is rich in bioactive compounds with various effects, including antioxidant, anti-inflammatory, and antimicrobial activities. Thermal aging at 90 °C alters the composition and bioactive properties of ginger. This study evaluated the effects of solvent type (water, ethanol 80°, Betaine:Glucose 1:1, Betaine:Glucose 5:2 and Betaine:Lactic acid 1:2), carrier type (maltodextrin, gum arabic, maltodextrin:gum arabic 80:20, 70:30, 60:40, 50:50, 40:60, 30:70, 20:80), and carrier concentration (w/v) (10%, 15%, 20%, 25%, 30%) on extraction and microencapsulation during instant tea production. The samples were evaluated based on TPC, TFC, ABTS, and DPPH, providing a basis for selecting suitable processing conditions for instant tea from thermally aged ginger. The research results determined that Be:Glu = 1:1, Mal:Gum = 40:60, and a carrier concentration of 20% were used for the production of instant tea from thermally aged ginger.

INTRODUCTION



Rich in bioactive compounds



Alter composition and bioactive properties

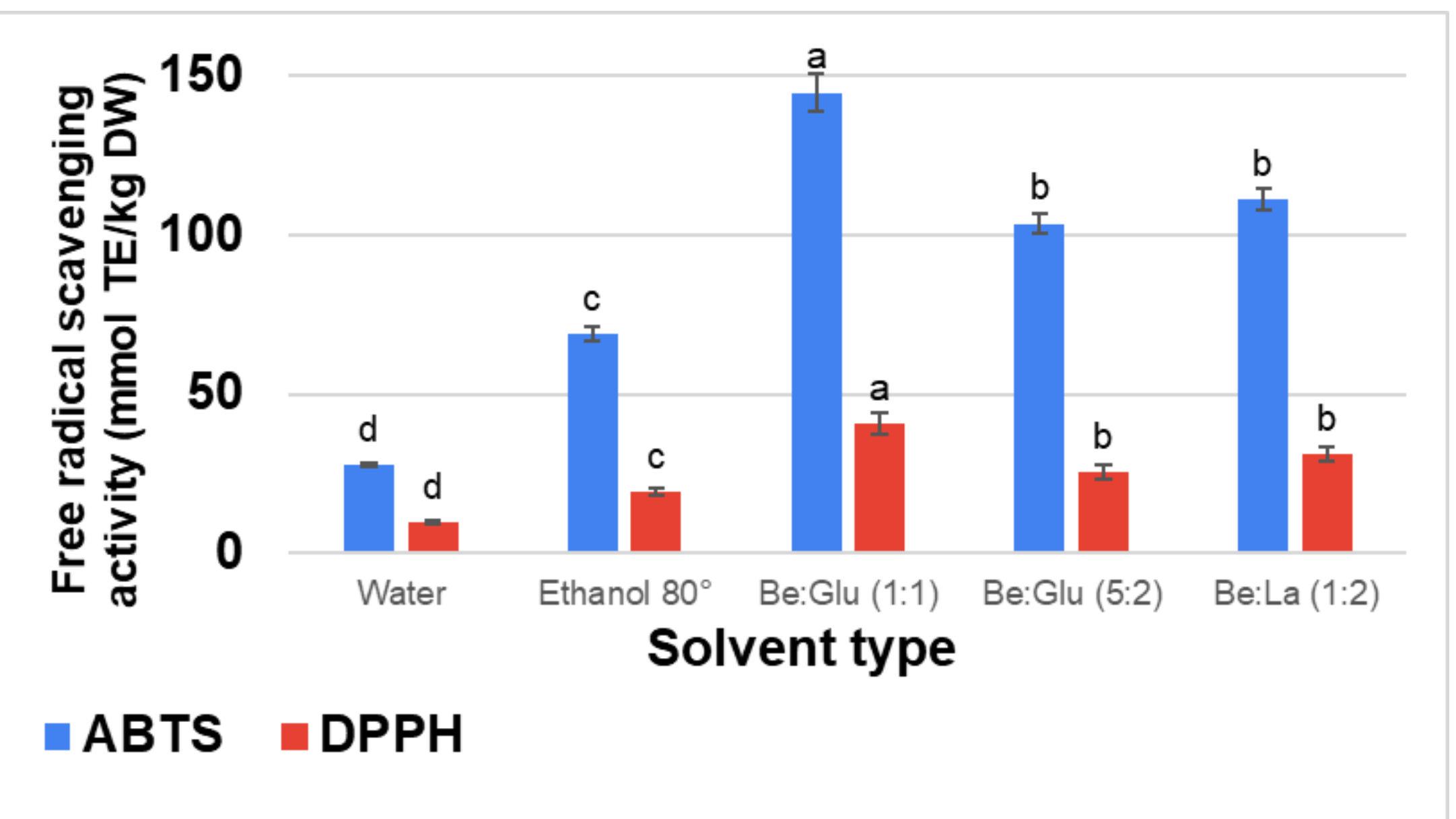


Convenient, but processing may affect bioactive compounds

RESULT AND DISCUSSION

1. Effect of solvent type

Solvent type	TPC (mg GAE/g DW)	TFC (mg QE/g DW)
Water	5,41±0,29 ^A	1,83±0,09 ^A
Ethanol 80°	10,26±0,37 ^B	3,48±0,22 ^A
Betaine:Glucose 1:1	20,48±1,33 ^D	13,55±0,91 ^D
Betaine:Glucose 5:2	14,75±1,15 ^C	7,21±0,51 ^B
Betaine:Lactic acid 1:2	13,87±0,23 ^C	10,70±0,88 ^C



2.Effect of carrier type

Carrier type	TPC (mg GAE/g DW)	TFC (mg QE/g DW)	ABTS (mmol TE/kg DW)	DPPH (mmol TE/kg DW)
Maltodextrin	2,18±0,05 ^A	0,48±0,04 ^A	6,29±0,21 ^A	3,49±0,32 ^A
Gum arabic	2,84±0,07 ^B	1,38±0,12 ^B	13,83±0,41 ^B	8,13±0,41 ^B
M:G 80:20	3,60±0,19 ^C	2,53±0,11 ^C	13,17±0,93 ^B	12,82±1,09 ^{CD}
M:G 70:30	5,18±0,17 ^D	3,15±0,07 ^D	25,65±0,41 ^C	12,41±0,83 ^C
M:G 60:40	5,96±0,23 ^E	3,28±0,09 ^{DE}	29,79±0,50 ^D	14,07±0,83 ^{CDE}
M:G 50:50	6,61±0,09 ^F	3,66±0,26 ^E	30,63±0,99 ^D	15,37±1,26 ^{DE}
M:G 40:60	10,10±0,17 ^H	7,81±0,13 ^G	51,68±2,08 ^F	20,00±0,94 ^F
M:G 30:70	7,99±0,09 ^G	5,40±0,18 ^F	38,48±0,62 ^E	19,24±1,24 ^F
M:G 20:80	6,78±0,15 ^F	5,39±0,18 ^F	37,55±1,29 ^E	16,23±1,26 ^E

3.Effect of carrier concentration

Carrier concentration	TPC (mg GAE/g DW)	TFC (mg QE/g DW)	ABTS (mmol TE/kg DW)	DPPH (mmol TE/kg DW)
10%	4,98±0,27 ^A	3,01±0,21 ^A	23,07±1,29 ^A	10,97±0,84 ^A
15%	6,39±0,28 ^B	4,19±0,19 ^B	31,52±1,30 ^B	14,61±1,30 ^B
20%	10,12±0,41 ^D	7,72±0,40 ^D	53,04±4,15 ^D	20,41±1,24 ^C
25%	9,32±0,37 ^{CD}	7,17±0,29 ^{CD}	51,32±2,47 ^{CD}	20,20±1,29 ^C
30%	8,74±0,57 ^C	6,90±0,35 ^C	45,31±2,17 ^C	16,68±1,24 ^B

CONCLUSION

Through the study on “Effects of processing parameters on the physicochemical properties and bioactive compound stability of instant tea produced from thermally aged ginger”, the results showed that betaine:glucose (Be:Glu) 1:1 provided high TPC, TFC, ABTS and DPPH values during extraction; maltodextrin:gum arabic (Mal:Gum) 40:60 showed good retention of bioactive properties during microencapsulation; and a carrier concentration of 20% resulted in high values of the evaluated indicators in the instant tea product.

MATERIAL AND METHODS

