

Stability of β -Carotene in Vacuum Packed Orange Flesh Sweet Potato Puree Treated with Preservatives



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Outline

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2. Study Design and Methods
3. Results and Discussion
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Background

- Orange fleshed sweet potato (OFSP) puree offers convenience as an ingredient to processed products such a bakery and baby foods.
- The peak/off peak season for harvesting OFSP as well as the high perishability of OFSP puree are a limitation to expanded use of puree
- The use of vacuum packing combined with application of preservatives potentially offer puree processors ability to transport and store OFSP puree without need of refrigeration.
- In order to expand use of vacuum packing and preservatives, it is necessary to get information regarding retention of β -Carotene in OFSP puree treated this way.
- Retention β -Carotene in stored OFSP flour has been studied in the past
- The objective of this study was to find out variability of β -Carotene content arising from treatment of OFSP puree with preservatives and vacuum packing.

Study design and Methods

Vita puree
K sorbate/Na
benzoate
Vacuum pack

Vita puree
K sorbate/Na
benzoate
Regular pack

Puree samples kept at
ambient ((temperature
15-23°C) for up to 12
weeks, protected from
light.

Kabode puree
K sorbate/Na
benzoate
Regular pack

Kabode puree
K sorbate/Na
benzoate
Vacuum pack

Vita puree
Mysa Antimicrobial/
Mysa Antifungal
Vacuum pack

Vita puree
Mysa Antimicrobial/
Mysa Antifungal
Regular pack

Sample taken every 4 weeks
and analyzed for β -Carotene
content

Kabode puree
Mysa Antimicrobial/
Mysa Antifungal
Regular pack

Kabode puree
Mysa Antimicrobial/
Mysa Antifungal
Vacuum pack

High performance liquid
chromatography (HPLC) with
C30, carotenoid column (3 μ m,
150X4.6 mm, YMC
Wilmington, NC)

Vita puree
No preservative
Vacuum pack

Vita puree
No preservative
Regular pack

Results expressed on dry
matter basis

Kabode puree
No preservative
Regular pack

Kabode puree
No preservative
Vacuum pack

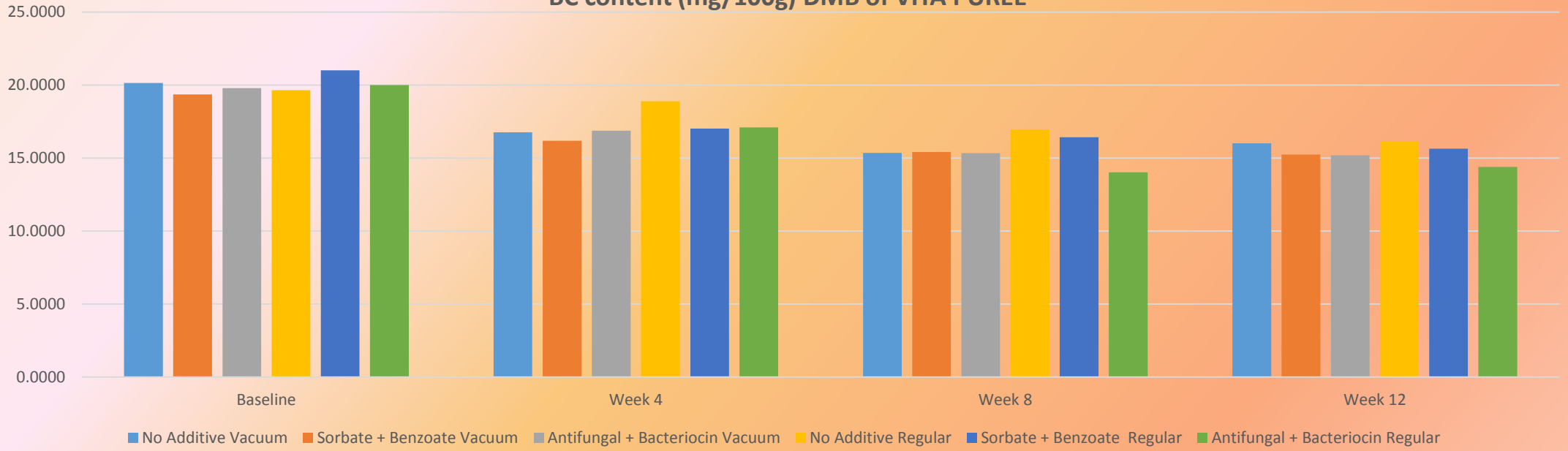
Results

- At 12 weeks, puree treated with different preservatives and with different packing condition showed significant difference on β -carotene content ($P \geq 0.05$)
- Retention in vita puree treated with sorbate/benzoate and antifungal/antibacterial was 79% and 77% in vacuum and 75% and 72% in regular pack respectively at week 12
- Retention in kabode puree treated with sorbate/benzoate and antifungal/antibacterial was 87% and 81% in vacuum and 94 and 83 in regular pack respectively at week 12

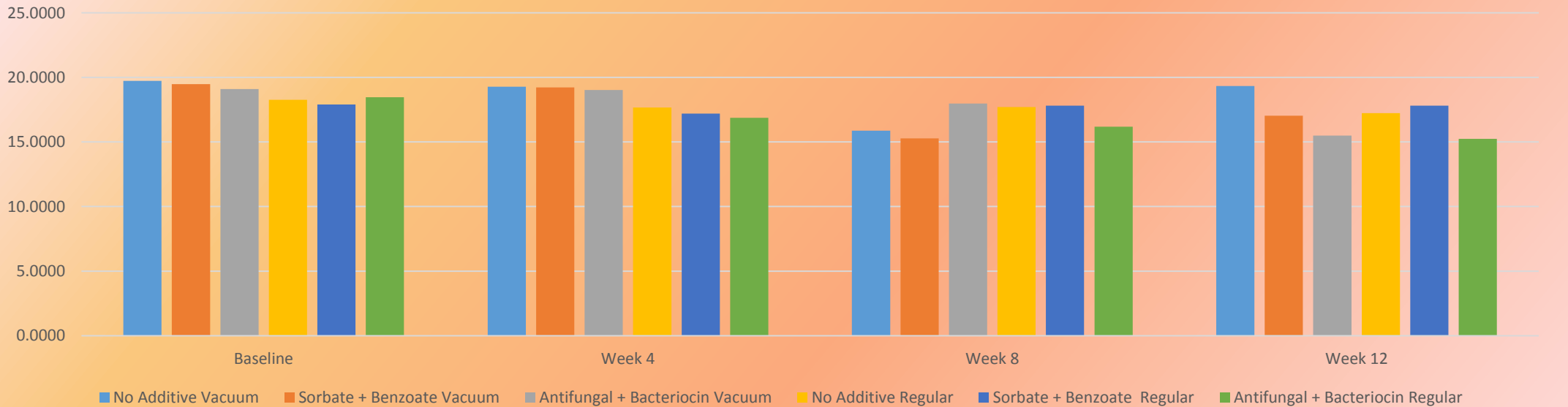
Variety	Treatment with Preservative	Packing	Baseline	Week 4		Week 8		Week 12	
			BC content (mg/100g) DMB	BC content (mg/100g) DMB	Percentage retention (%)	BC content (mg/100g) DMB	Percentage retention (%)	BC content (mg/100g) DMB	Percentage retention (%)
Vita	No Additive	Vacuum	20.14±0.95	16.76±1.08	83.24	15.36±0.65	76.26	16.01±1.43	79.47
	Sorbate + Benzoate	Vacuum	19.35±1.42	16.18±0.66	83.61	15.41±0.65	79.64	15.25±1.47	78.78
	Antifungal + Bacteriocin	Vacuum	19.79±0.16	16.87±0.39	85.22	15.34±0.42	77.52	15.20±1.01	76.79
	No Additive	Regular	19.64±1.33	18.90±0.24	96.20	16.95±0.10	86.27	16.15±0.99	82.23
	Sorbate + Benzoate	Regular	21.01±0.61	17.01±0.84	80.98	16.42±0.40	78.17	15.64±0.82	74.46
	Antifungal + Bacteriocin	Regular	20.00±1.31	17.10±1.18	85.50	14.02±1.08	70.08	14.40±0.85	71.97
Kabode	No Additive	Vacuum	19.73±1.64	19.28±0.32	97.69	15.88±0.72	80.48	19.34±1.40	98.03
	Sorbate + Benzoate	Vacuum	19.47±0.76	19.23±0.73	98.74	15.28±0.75	78.46	17.04±1.93	87.48
	Antifungal + Bacteriocin	Vacuum	19.09±0.40	19.03±0.46	99.64	17.98±1.95	94.13	15.49±1.03	81.10
	No Additive	Regular	18.27±0.98	17.66±1.28	96.65	17.71±1.19	96.92	17.24±0.53	94.34
	Sorbate + Benzoate	Regular	17.90±0.66	17.20±1.37	96.11	17.82±1.17	99.57	16.81±1.28	93.93
	Antifungal + Bacteriocin	Regular	18.46±0.86	16.87±1.14	91.39	16.18±1.24	87.66	15.25±1.09	82.61

Table 1: Retention of β -carotene in Vita and Kabode puree treated with different preservatives with or without vacuum pack

BC content (mg/100g) DMB of VITA PUREE



BC content (mg/100g) DMB of KABODE PUREE



Conclusion

Sorbate/benzoate and/or Misa antifungal/antibacterial combined with vacuum packing preserves OFSP puree and retain 77 -93% β -carotene content in 12 weeks at ambient conditions (temperature range 15-23°C). This has potential to facilitate expanding use of OFSP puree in Sub-Saharan Africa.

Thank you

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