On Athlete Summit



Agenda:

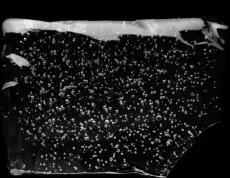
- Early history of Maurten.
- Why carbohydrates?
- How to use them?
- Bicarbonate.
- Questions.



How could Maurten spread so fast?



The Hydrogel concept seems to enhance carbohydrate tolerability.







Global Launch 27th of March 2017

Drink Mix 320: the worlds most concentrated sports drink ~13.7%







How could Maurten spread so fast?

More carbohydrates.



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- Early history of Maurten.
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Lactate profile.

Blood lactate response from an incremental step test (5min at each step)

Male runner 73kg.

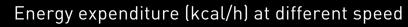
14km/h = 4:17min/km 15km/h = 4:00min/km 16km/h = 3:45min/km 17km/h = 3:32min/km 18km/h = 3:20min/km 19km/h = 3:10min/km 20km/h = 3:00min/km 21km/h = 2:52min/km

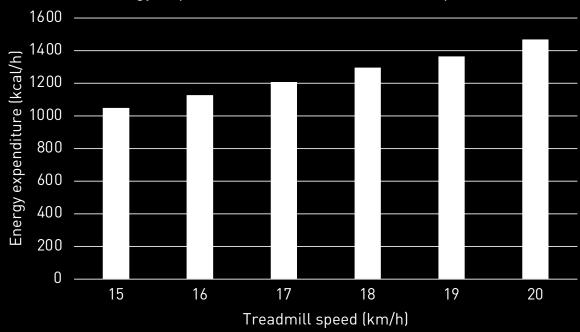




Blood lactate response from an incremental step test (5min at each step)

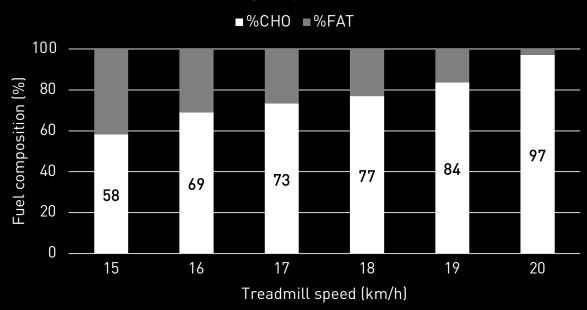




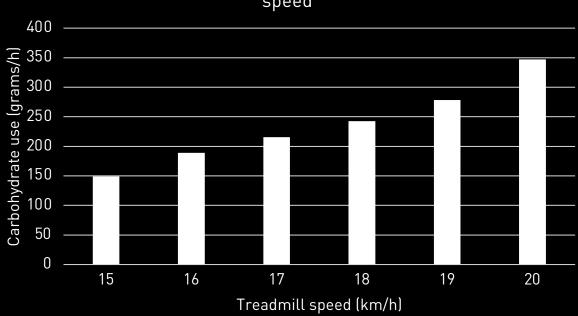




Contribution of carbohydrates (%) versus fat (%) to energy expenditure



Carbohydrate utilization (grams/hour) at different speed





High-volume training is costly/demanding

Energy. Carbohydrate.

Estimated energy and carbohydrate need for a 73kg male runner.

	Total distance	Energy	Carbohydrates
Monday	27km	4.200 kcal	400 g (5.5 g/kg)
Tuesday	34km (20km threshold)	4.700 kcal	620 g (8.4 g/kg)
Wednesday	26km	4.100 kcal	390 g (5.3 g/kg)
Thursday	34km (20km threshold)	4.700 kcal	620 g (8.4 g/kg)
Friday	15km	3.300 kcal	280 g (3.8 g/kg)
Saturday	21km (incl 20x200m uphill)	3.700 kcal	450 g (6.1 g/kg)
Sunday	21km	3.700 kcal	340 g (4.6 g/kg)
	178km	~4.000 kcal/day	435 g (6.0 g/kg)



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Product range.







Carbs: 25 gram per serving.









SOLID (+C) Carbs: ~45 gram per serving.









On Athlete Summit St Moritz

Support your hard days.

1 x DRINK MIX320 1 x SOLID

Adjust to your body weight: 55 kg = 2.3 grams/kg 65 kg = 1.9 grams/kg 75 kg = 1.7 grams/kg





125 grams of carbohydrates



Use Maurten on the hard days.

	Total distance	Energy	Carbohydrates
Monday	27km	4 200 kcal	400 g (5.5 g/kg)
Tuesday	34km (20km threshold)	4.700 kcal	620 g (8.4 g/kg)
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	178km	~4.000 kcal/day	435 g (6.0 g/kg)



Fartlek.

30 - 60min

Periods of fast running mixed with periods of slower running.



Pre-exercise window 1 - 4 h before

One GEL160





Warm-up 10 - 30 min



Main set 30 - 60 min



Cool down 10 - 30 min



Threshold or tempo.

20 - 70min

Example sessions: 6 – 10 x 1000m (1min rec.) 4 – 8 x 2000m (1-2min rec.) 3-5 x 3000m (1k of jog in between)

SOLID
225

SOLID
225

MAURTEN

MAURTEN

100 mg of Caffeine



DRINK MIX320 1-2 sips now and then











Pre-exercise window 1 - 4 h before

Warm-up 10 - 30 min Main set 20 - 70 min

Cool down 10 - 30 min



Caffeine.

One of five performanceenhancing supplements

Scientific recommendation: 3 – 6 mg/kg

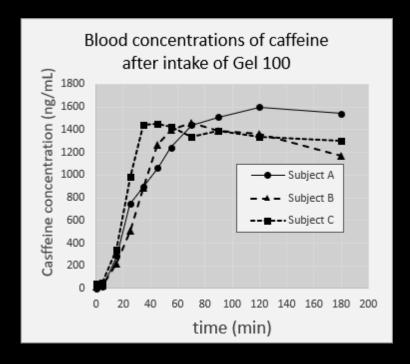
Adjust to your body weight:

55 kg = 1.8 mg/kg 65 kg = 1.5 mg/kg 75 kg = 1.3 mg/kg





100 mg in each serving





Lactate production/tolerance.

Accumulated distance 1500-8000m

Example sessions during pre-competition period: 8 – 16 x 200m (1min rec.) 1-2 x (10 – 400m) (60-90 s rec.)

100 mg of Caffeine



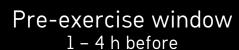
DRINK MIX160 1-2 sips now and then











Warm-up 10 - 30 min

Main set 1500 – 8000m

Cool down 10 - 30 min



Maurten Bicarbonate system.

A hydrogel-based bicarb delivery system.

Designed to:

- 1. Enhance tolerability
- 2. Make it easier to take
- 3. Increase buffering capacity

Up to 1% performance benefit.



A Novel Carbohydrate Hydrogel System for the Delivery of Bicarbonate Mini-Tablets Increases Acid-Base Buffering and Alleviates Gastrointestinal Discomfort



Lewis A. Gough¹ and S. Andy Sparks²

Introduction

Sodium bicarbonate (NaHCO₃) is a popular ergogenic aid that was recommended in the most recent International Olympics Committee (IOC) consensus statement (Maughan et al., 2018).

- A primary factor that decides the suitability of NaHCO3 is the gastrointestinal (GI) discomfort commonly experienced by athletes following ingestion, such as stomach bloating and diarrhoea.
- Recently, a novel form of NaHCO3, called the "bicarb system" (Maurten^{me}), has been released that claims to reduce GI discomfort. This is due to the carbohydrate hydrogel and mini-tablet design that allows transport through the pyloric sphincter (Geissler and Powers, 2017).
- Whilst this novel form claims reductions in GI discomfort, no data has been published to support these claims.
- The purpose of this study therefore was to assess a novel carbohydrate system for the delivery of NaHCO, mini-tablets on blood acid base balance and gastrointestinal (OI) discomfort.

Methods

Ten well-trained cyclists (De Pauw et al., 2013) (body mass: 77±5 kg: VO_{3max}: 6515 ml/kg⁻¹ min⁻¹; peak power output: 425119 W) participated in this double blind, randomised, and crossover study. All participants completed the protocol at the same time of day (± 1 h).

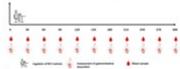


Figure 1. Schematic of the study procedures

Participants ingested 0.3 g/kg1 BM sodium bicarbonate in either vegetarian capsules (size 00, Bulk Powders, UK; C-SB) or the bicarb system (Maurten, TM; M-SB). Blood samples were then taken for blood pH and bicarbonate (HCO_s) (ABL9, Radiometer Medical Ltd., Denmark). Participants were quietly rested throughout the time period with nothing but water ingestion permitted (ad libitum). Two hours prior to ingestion of C-SB or M-SB, participants ingested a 1.5 g-kg-1 BM carbohydrate meal to mimic the practices of trained cyclists in training and competition. Gastrointestinal discomfort (GI) was measured via VAS scale as per previous research (Gough et al., 2017). Blood data were analysed using repeated measures ANOVA and gastrointestinal responses were analysed using a paired T-test. Effect sizes were calculated using partial eta squared and Hedge's g for ANCVA and T-Test respectively. All analysis was completed using SPSS (v28, IBM, Chicago)

Results

The change from baseline to peak HCO, was 1.5 mmol-L-1 greater following M-SB compared to C-SB (8.2 ± 0.8 vs. 6.7 ± 1.4 mmol+1: p < 0.001: ES = 1.26).

Mean aggregated overall gastrointestinal discomfort (sum of all GI symptoms) was reduced following SBCMT versus C-SB (9 ± 9 vs. 85 ± 63 au; p = 0.003; ES = 1.62), Specifically, M-SB reduced stomach cramps (6 vs 164 au), bowel urgency (10 vs 141 au), diarrhoea (0 vs 149 au), beliching (6 vs. 46 au), and stomach-ache (14 vs 181 au) over the 5 h period compared to

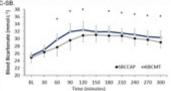


Figure 2: Moon a standard deviation blood bicarbonate (HCO, Hollowing SBCMT or

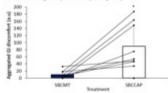


Figure 3. Mean is standard deviation aggregated GI decombit of all symptoms (a is following SBCMT or SBCCAP "Denotes significantly different from placetic (p=0.05)

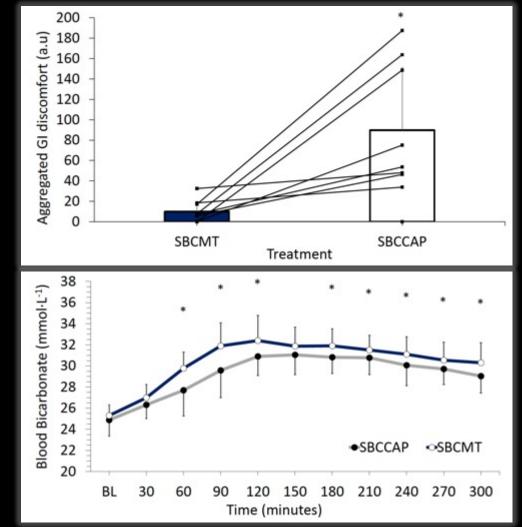
Conclusion

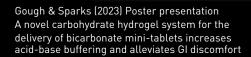
- · The bicarb system reduced, and nearly eliminated, GI discomfort compared to the responses following NaHCO, ingestion in vegetarian capsules.
- The increase blood concentration in HCO, following ingestion of the bicarb system versus the vegetarian capsules shows a large increase and therefore ergogenic potential for an exercise performance benefit.

References

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maurten.com

On Athlete Summit St Moritz

Sodium Bicarbonate.

One of five performanceenhancing supplements

World Athletics.

- Legal to use by athletes
- Demonstrated performance benefits



All Maurten products are tested via Informed Sports certificate program.





International Association of Athletics Federations Consensus Statement 2019: Nutrition for Athletics

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The University of Australian Institute of Sport and Australian Institute of Sport and University of the Sunshine Coast Trent Stellingwert

University of Stirling International Association Canadian Sport Institute - Pacific, Athletics Canada, and

The International Association of Addictics Federations recognizes the importance of notificial practices in optimizing an Addicts's well-being and performance. Although Athletics encompasses a diverse range of track-and-field events with different performadeterminants, there are common pouls around nutritional support for adaptation to training optimal performance for key events, and substitution, exceed an execution of poor description maked regards to except conjudent to extransic polarity produces to the extransic polarity of called relater and fluid replacement. Although a "food first" policy should underste an Addess's matrices plan, these may be occasions for the judicions use of medical supplements to address nativest deficiencies or sports foods that help the athlete to mee natritional goals when it is impractical to eat food. Evidence-based supplements include caffeine, bicarbonate, beta-alanine, nitrate and constinc between their value is smellle to the characteristics of the event. Special considerations are needed for travel challenging environments (e.g., heat and altitude); special populations (e.g., females, young and masters atblens); and notified dutary this or (e.g., seguritude, blatch); such Additor should develop a personalized, periodicalle, and practical statistion plan via ordinatestates with their create and accordited species mattition experts, to optimize their performance.

Keywords: performance supplements, RED-S, track and field

Bulls and State on with the Assistant Entitets of Sport, Carbons, ACS, Assistan Bulls is also with the Mary MacKilley Institute for Health Ecounts, Assessin Caledic University, Melbourne, Victoria, Australia. Castell is with Green Temphron Callage, University of Oxford, United Kingdom, Case is with the Kerry Swinger Section. Department of Kinescology. Discovology of Commission, Lincology, Click. Close is with the Research Socialists for Sport and Sturrior Sciences, Licespool Soles. Mason University, Liverpool, United Kingdom, Come is with the Disputation of Number Disputation & Food, Missault University, Michigana, Victoria, Assemble Disputation with the School of Albert Shallb Sciences, Carllish University, Cold Coast, Operatured, Appendix, Males in with the School of Bellevinseed and Health Sciences, Appendix Catholic University, Michaelme, Victoria, Assentials, Lis-is with the Neurobsology, Physiology and Bullerian Department, University of California Devis, Clark, US. Cathods Colometria, Michosane, Visionia, Asserbia, Li Si wide for Neutrinologia, Physiologia and Bioleania Chapterinos, Visionia Grind Colome, Cat., Chi. Makis is well the Engineer of Specific Concil, Insurant University. Sci. Another. Paring is with the Exchard of Human Sections. The Electronic Specific Concil, Insurant Colometria, Cathodia, Sandaria is suit Performance Insurant and Engineer of Specific Concil, Insurant Asserbia, Amerika, Sandaria is suit Performance Insurant and Engineer of Specific Colometria, Cathodia, Cathodi

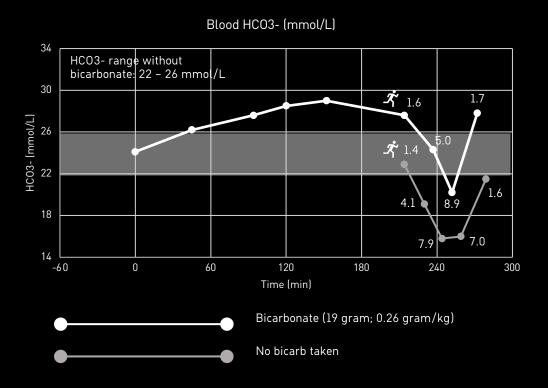


Sodium Bicarbonate.

Scientific recommendation: 0.2 - 0.3 g/kg

Adjust to your body weight:
Bicarb15 - 55 kg = 0.27 g/kg
Bicarb15/19 - 65 kg = 0.23-0.29 g/kg
Bicarb19 - 75 kg = 0.25 g/kg







Four commercial doses.

Scientific recommendation: 0.2 – 0.3 g/kg.

Bicarb15 = 15 grams Bicarb19 = 19 grams Bicarb22 = 22 grams Bicarb25 = 25 grams

	Small	Medium	Large	X-large		
Dose per sachet	15	19	22	25		
Recommended						
for body weight						
BW	Resulting dose per kilo body weight					
46	0,33	0,41	0,48	0,54		
47	0,32	0,40	0,47	0,53		
48	0,31	0,40	0,46	0,52		
49	0,31	0,39	0,45	0,51		
50	0,30	0,38	0,44	0,50		
51	0,29	0,37	0,43	0,49		
52	0,29	0,37	0,42	0,48		
53	0,28	0,36	0,42	0,47		
54	0,28	0,35	0,41	0,46		
55	0,27	0,35	0,40	0,45		
56	0,27	0,34	0,39	0,45		
57	0,26	0,33	0,39	0,44		
58	0,26	0,33	0,38	0,43		
59	0,25	0,32	0,37	0,42		
60	0,25	0,32	0,37	0,42		
61	0,25	0,31	0,36	0,41		
62	0,24	0,31	0,35	0,40		
Ç3	0,24	0,30	0,35	0,40		
64	0,23	0,30	0,34	0,39		
65	0,23	0,29	0,34	0,38		
66	0,23	0,29	0,33	0,38		
67	0,22	0,28	0,33	0,37		
68	0,22	0,28	0,32	0,37		
69	0,22	0,28	0,32	0,36		
70	0,21	0,27	0,31	0,36		
71	0,21	0,27	0,31	0,35		
72	0,21	0,26	0,31	0,35		
73	0,21	0,26	0,30	0,34		
74	0,20	0,26	0,30	0,34		
75	0,20	0,25	0,29	0,33		
76	0,20	0,25	0,29	0,33		
77	0,19	0,25	0,29	0,33		
78	0,19	0,24	0,29	0,32		
79	0,19		0,28	0,32		
80	0,19	0,24	0,28	0,32		



Sodium Bicarbonate.

Mechanism behind the effect.

High intensity zone Above anaerobic threshold

