

## Cream Day.

**Objective** - to achieve a high Skaldeman ratio ( = fat / (carbs + protein) all in grams ) and observe the effect on blood ketones via finger prick sample and Freestyle Optium meter.

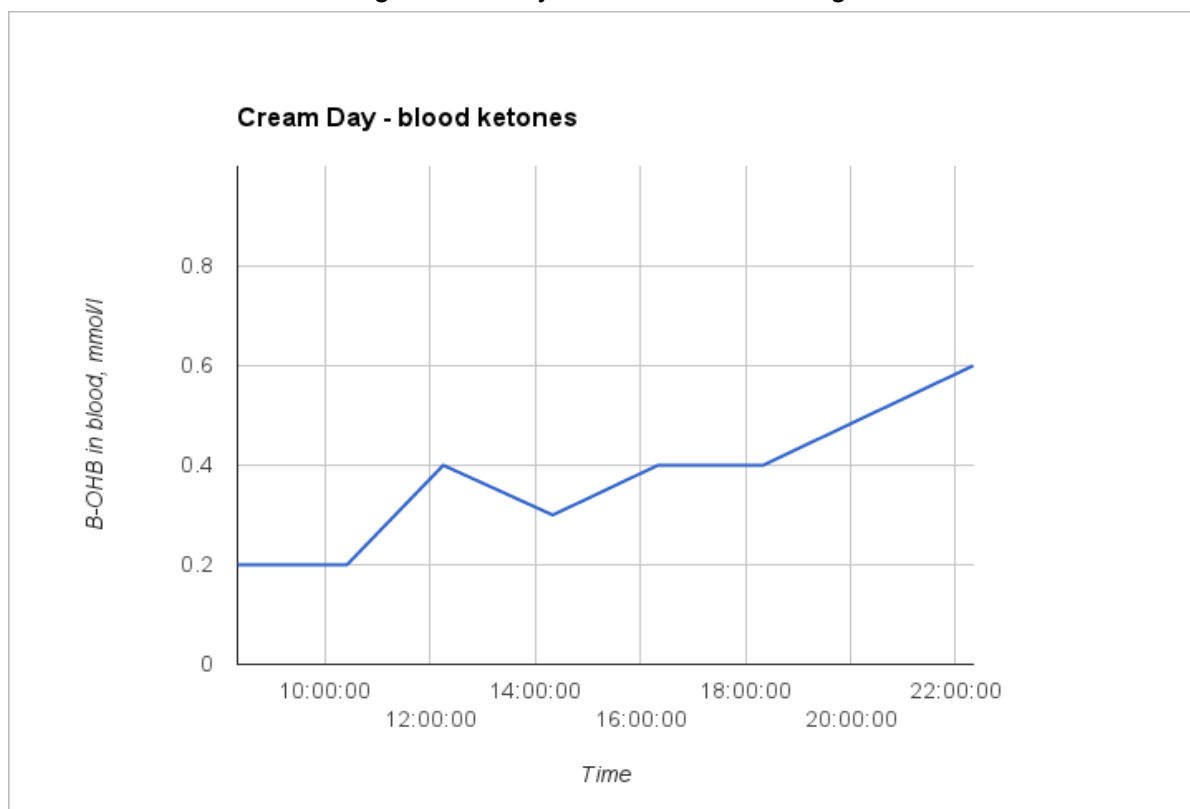
**Subject** (n=1) 52 year old male, 5'-10" (1.80m), baseline weight 12st7 ( 175 lbs, 79.45 kg ) typically eating around 1500 calories with carbs (UK carbohydrates, by analysis) below 30g. Approximately weight stable, been as low as 12st3 in past month. Long term low carb eater (3y).

**Method** - using double cream (48% fat) as the basis of the day's food intake to ensure high fat content. Protein intake from calcium caseinate powder (Myprotein.com, chocolate flavour). Other low carb ingredients added for variety and palatability - cocoa, desiccated coconut, almonds, Koko almond milk and a sausage as a bed time snack.

**Results** - food intake added up to 1480 calories, with 200ml of double cream providing 900 calories. Calories from fat was 78% of total, protein 71g and carbs 12g.

Overall Skaldeman ratio for the day was 1.54. Without the bed time sausage (eaten after the last reading of the day) it would have been 1.65 with a total of 1350 calories, 79% from fat.

Blood ketones climbed throughout the day from the initial overnight fast value of 0.2 :-

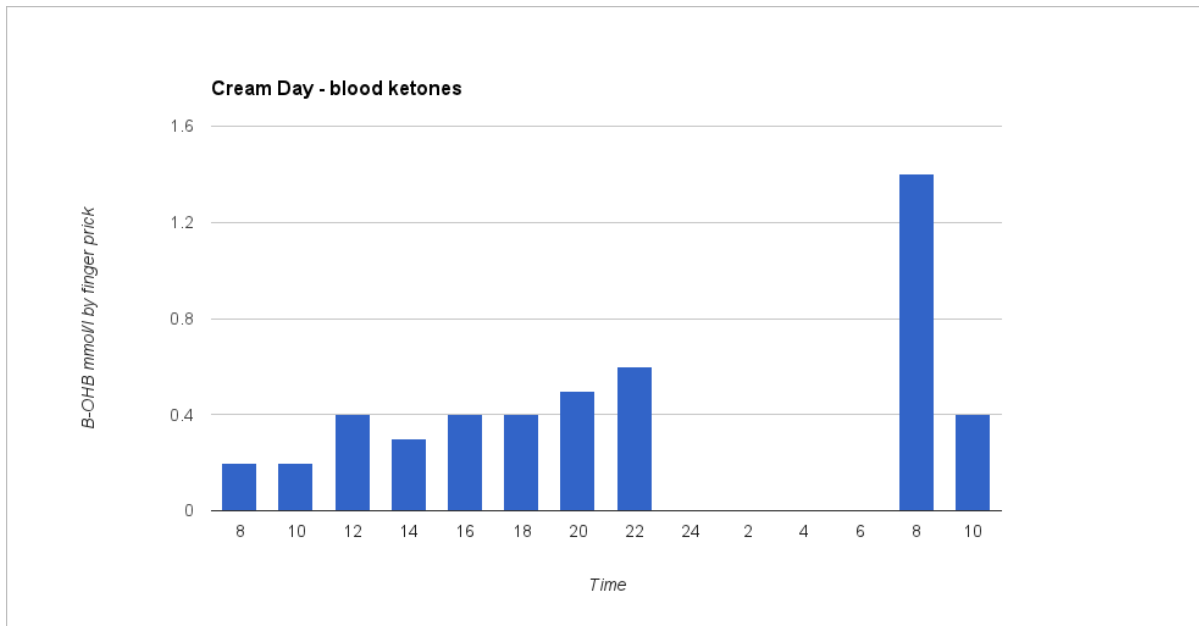


This steady progression suggests a growing use of ketones as fuel through the day. With a low carbohydrate intake and a calorie deficit this is to be expected, however as I am always low carb and usually in a calorie deficit I thought I would already be at a high level of ketosis.

Next morning the scales delivered a 3.0 pound ( 1.4 kg ) weight reduction, which was a surprise. On reflection I had probably urinated more during the day and unusually I got up to do so in the night, so I suspect this is largely water released from the use of glycogen reserves.

I ate 1480 calories and my Fitbit estimated my energy expenditure for the day as 2140 calories so the difference of 660 could have come from 165g of glycogen that would have released up to 800g of water. Mid morning I had a visit to the toilet and probably lost 400g of faeces weight, although immediately after my scale weight was the same as on waking.

The following morning fasted ketone levels had risen to an impressive 1.4. After a couple of cups of black coffee and 20 minutes of walking / jogging I returned home for the final reading of 0.4. Seems I had burned off some of the ketones through exercise :-



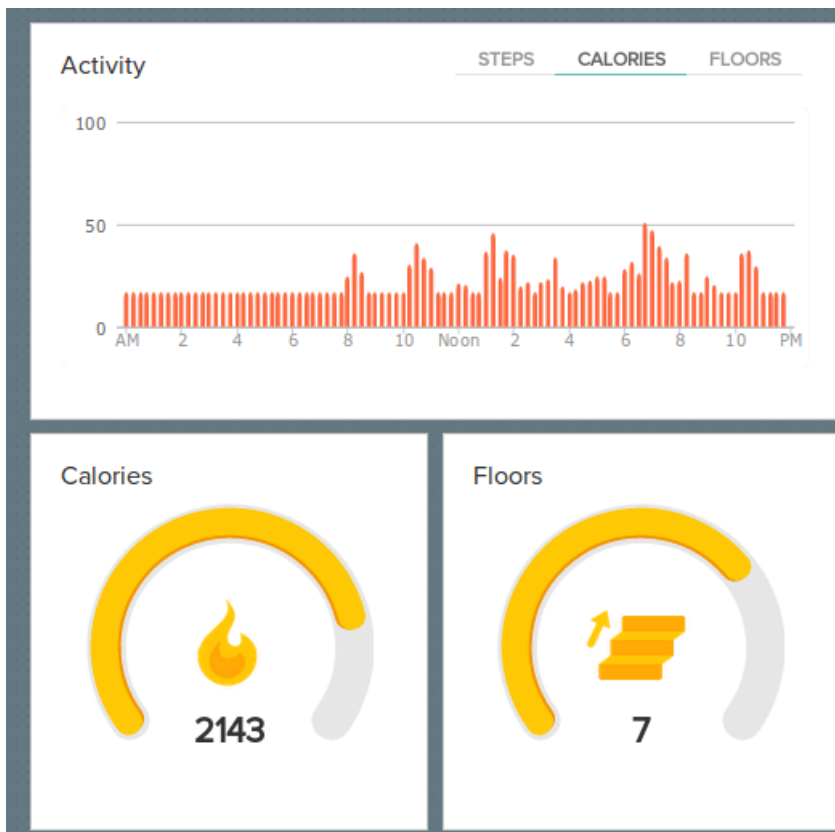
Conclusions - I wasn't strongly in ketosis at the start, although the meter reading of 0.2 suggests my blood sugar was suitably low - otherwise I record zero. The increasing ketone levels through the day (and night) show increasing switch to ketones as a fuel, presumably as my glycogen reserves were depleted and less glucose was on tap.

Eating low carb with a high percentage of calories from fat was effective at promoting ketosis.

Most of the 3 lb weight loss I put down to water weight from glycogen reduction and the stricter carb restriction to less than 12 grams (less than 10 without the 10.30pm sausage snack).

As fat was my primary dietary intake the use of fat and production of ketones was inevitable, the calorie deficit could be met by fat from adipose body reserves or from glycogen reserves.

Any repeat experiment should measure urine volume and stool weight as well as fluid intake in order to attempt a water balance. Blood glucose measurements could also be helpful.



Fitbit activity monitor results for the day - calories per 15 minutes.

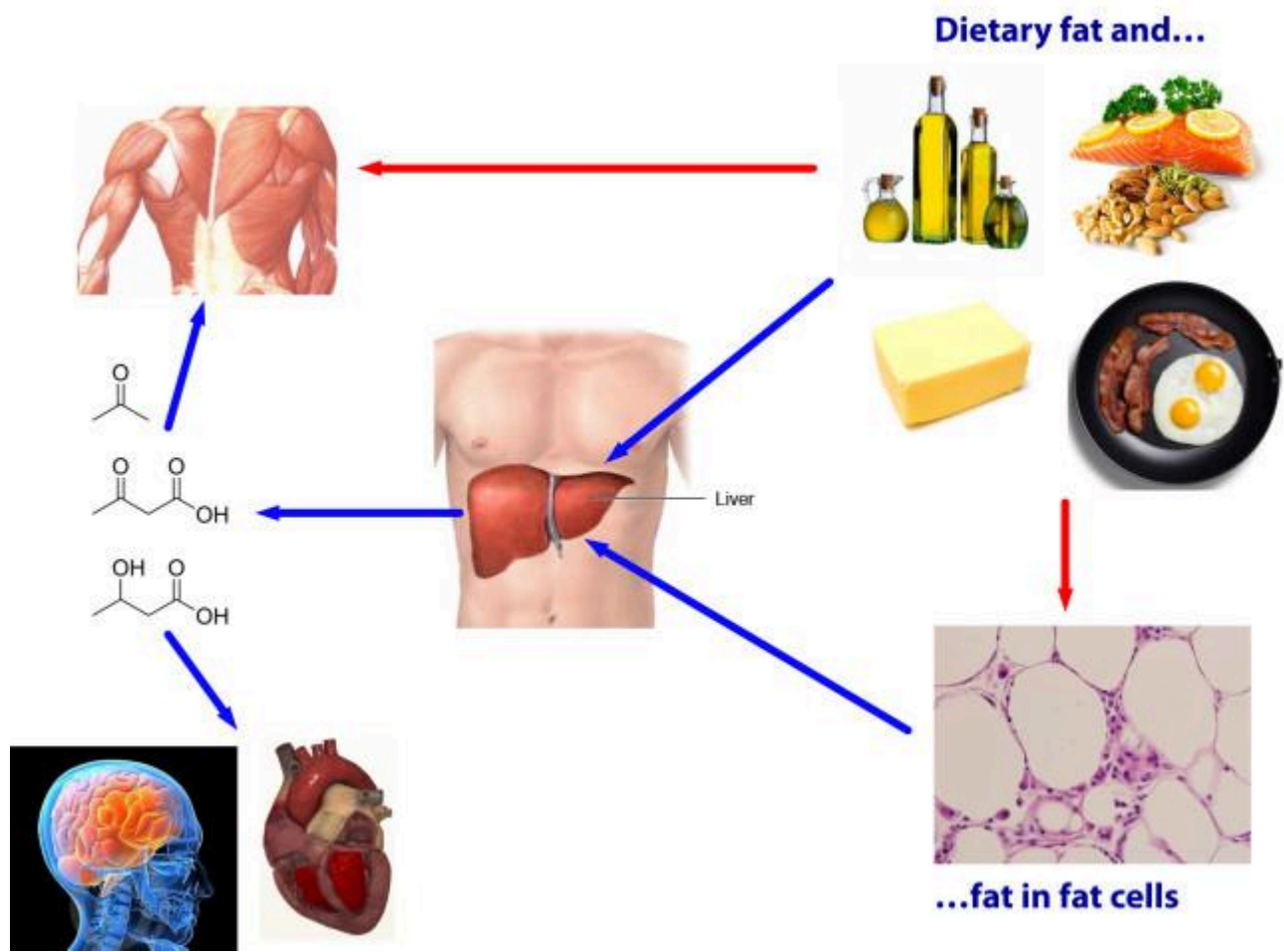
The three meals of the day were each 60-70g of double cream with 16g of chocolate flavoured [calcium caseinate powder](#) , mixed to make a dessert type paste using extra water or Koko coconut milk as required. A few grams of cocoa powder were added in some cases, or dessicated coconut, or a few almonds chopped on top. The caseinate is very filling and forms a stiff paste which does require thinning for ease of consumption and good mixing.

Bed time snack (post measurements) was one Waitrose spicy pork sausage with paprika, chillies and beans - about 135 calories, 2g of carbs.

Drinks were ad-lib black coffee, two of which had a teaspoon of double cream added.

Clearly the above day's food is not nutritionally complete or sustainable as a way of eating other than as a very short term "attack" to get into, or back into, full ketosis and fat burning.

The diagram below shows how dietary fat and fats from adipose tissue reserves can supply energy to the body. Fat from your food (red arrows) can be used by muscles and other tissues, or go into storage. Fat from food can be used along with fat from your flab (blue arrows) to be converted into ketones in the liver and these can provide energy to muscles, the brain and the heart. Measuring blood ketones is an indication of how much of the blue is happening, although the level measured may vary as it is a balance between production and use at the time of measurement.



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