**Impact of Reduced Meal Frequency without Caloric Restriction on Glucose Regulation in Healthy, Normal Weight Middle Aged Men and Women**  
Olga Calson  
  
**Introduction**  
Background: This study investigates the affect consuming only one meal a day, without calorie restriction, has on diabetes risk.  
  
**Methods**  
Repeated measures design  
 - This means the participants were tested against themselves (they did one intervention for X amount of time and were measured, then did the other intervention for X amount of time and were measured, then compared both measurements).  
  
15 Middle aged (40-50 years old), healthy participants (based on BMI and blood measures) that maintained their weight throughout the study.   
  
Two conditions tested:  
1. Consumed 3 meals a day for 8 weeks.   
2. Consumed 1 meal a day for 8 weeks.   
 - 11 week “washout” period between both interventions/conditions.  
  
Blood was taken to determine blood glucose (blood sugar) levels and insulin, as well as a few other measures (but those are the two we will focus).   
  
**Results**  
 *Figure 1*  
This is a glucose tolerance test where the participants were fasted for a number of hours, then blood was taken before a controlled amount of sugar was consumed, and then blood was taken and measured every 20 minutes for 2 hours.   
  
Result:  
- There are higher blood sugar levels when people had switched their diet to consume 1 meal a day.  
  
Take Away: This data implies worse glucose/sugar clearance with one meal a day (OMAD)  
  
*Figure 2*  
Same experiment as figure 1, but testing insulin in the blood, instead of blood sugar/glucose.   
  
Result:   
- Insulin is the same between 3 meals vs 1 meal a day.   
  
Take Away: This implies insulin secretion from the pancreas is the same across the two conditions – meal frequency does not impact insulin release.   
  
*Table 1*  
This is just a table with the quantification of some of the experiments already discussed, as well as others.   
  
Result:  
  
- This simply confirms the data from the two previous figures. Glucose is elevated, insulin is not, in the one meal a day condition.   
  
- Beta cells, of the pancreas (where insulin is released), are slow to release insulin at first (B cell function 1st phase), but catch up later (2nd phase).   
  
Take Away: Nothing too new – total insulin release is the same, but speed of release seems slower in the one meal a day condition.   
  
**Conclusions**  
- Based on this data, One Meal a Day (OMAD) has negative consequences for diabetes as it lower glucose/sugar tolerance/clearance, and likely decreases the effectiveness of insulin (by being the same, yet clearing out less glucose).