

**Grown By Nature's B.I.O.**  
**Short-Term human study with Glyco-Phos™**  
**J.A. Vinson 1983**

Department of Chemistry, University of Scranton, Pennsylvania 18510–4626

### **Protocol**

Eight volunteers between the ages of 18 and 20 were used for this study. There were 4 males and 4 females who were normal, non-obese individuals. A 24-hour urine was collected the day before the test. Each subject fasted for 12 hours and in the morning took 30ml of Glyco-Phos with 50ml water followed by 50ml of water to rinse out the container.

Finger-prick blood samples were taken at 0, 30 minutes, 1.5 hours, 2.5 hours and 4 hours after supplementation. The blood was converted to serum for analysis. Each subject collected a 24-hour urine sample for the 24-hour period following supplementation. Urines and serum were analysed for glucose by a standard enzymatic technique and phosphorus by a standard oxidation method.

### **Results and Discussion**

The urine results before ingesting Glyco-Phos and after are presented in Table 1.

**Table 1:** The urine excretion of glucose and phosphorus in human subjects following Glyco-Phos ingestion.

<b>Subject</b>	<b>Glucose Excreted (mg/24 hour)</b>		<b>Phosphorus Excreted (mg/24hour)</b>	
	<b>Before</b>	<b>After</b>	<b>Before</b>	<b>After</b>
JG	86.7	124.5	517	766
MK	105.6	186.8	368	757
JM	8.8	42.2	498	808
MJc	132.6	192.5	571	716
JC	91.5	106.7	428	453
SK	169.0	444.8	661	1207
RK	64.4	100.3	441	771
ML	157.3	213.7	1245	1284
Average ± S.D.	102.0 ± 52	176.4 ± 122	591 ± 279	846 ± 272

The Glyco-Phos provided 7.0g of monosaccharide's (as glucose and fructose) and 1.0g of phosphorus. The subjects excreted an average 74mg of glucose indicating only 1.1% of the sugars were excreted. This implies that almost 100% was stored. The subjects excreted an average of 225mg of phosphorus indicating 25.5% of the phosphorus was excreted.

The results of the serum analyses are shown in table 2.

**Table 2:** Serum glucose and phosphorus concentrations in human subjects following Glyco-Phos ingestion.

<b>Time of sampling</b>	<b>Average serum glucose (mg/100ml)</b>	<b>Average serum phosphorus (mg/100ml)</b>
0	95.9 ± 15.0	5.51 ± 0.61
0.5 hrs.	121.3 ± 20.3	11.55 ± 2.90
1.5 hrs.	153.0 ± 17.6	14.88 ± 2.04
2.0 hrs.	166.5 ± 32.0	14.73 ± 3.13
2.5 hrs.	151.5 ± 30.7	12.13 ± 4.22
4.0 hrs.	110.2 ± 9.6	8.96 ± 2.32

If one calculates the difference in concentration between the zero time and the time for maximal concentration, one arrives at about 60mg glucose/100ml and 9mg phosphorus/100ml. If these numbers are multiplied by 100, you can determine the amounts of glucose and phosphorus in 10 litres – the total volume of blood in the body. These numbers are 6g of glucose and 0.9g of phosphorus. Thus, 6g/7g or 86% of the glucose in the product was absorbed and 0.9/1g or 90% of the phosphorus was absorbed.

The time to reach maximal concentration was about 2 hours for both glucose and phosphorus. Previous studies have shown that glucose and fructose in solution or mixed with foods caused a maximal serum glucose concentration between 30 and 60 minutes for normal subjects.

The Glyco-Phos product is absorbed more slowly than glucose or fructose in solution. Also the Glyco-Phos does not produce a hypoglycaemic effect, i.e. a serum glucose concentration below the zero time value, which is the case with the glucose solution used in the oral glucose tolerance test.

It can be concluded that Glyco-Phos provides energy in the form of glucose to the body at a slower rate than pure glucose or fructose and for a longer period of time.