

**Department of Biology and Biochemistry**

**CELL BIOLOGY**

**(BIOL 244)**

**Experiment 7: Isolation of Chloroplasts from spinach leaves and the**

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**Q.1**

The extraction of chlorophylls and carotenoids from water-containing plant materials necessitates the use of polar solvents that can absorb water, such as acetone, methanol, or ethanol. To be preserved reliably, these extracts must be transferred to a solvent such as diethyl ether.

**Q.2**

**Cr = C0(A0-Ac)/ A0**

Cr is the day reduced in moles/liter(M)

C0 is the orginal dye concentration in the moles/liter(0.5\*10-3)

A0 is the absorbance of the mixture at the start

Ac is the absorbance of the mixture at 10 minute

* **Inactive:**

Cr = 0.5\*10-3 (0.218-0.045)/0.218

Cr = 0.5\*10-3 (0.173)/0.218

Cr  = 8.65\*10-5/0.218

Cr = 3.96\*10-4

* **Active:**

Cr = 0.5\*10-3 (0.207-0.037)/0.207

Cr = 0.5\*10-3 (0.17)/0.218

Cr  = 8.5\*10-5/0.207

Cr= 4.106\*10-4

* **Dark:**

Cr = 0.5\*10-3 (0.357-0.299)/0.357

Cr = 0.5\*10-3 (0.058)/0.357

Cr  = 2.9\*10-5/0.357

Cr= 8.123\*10-5

**Q.3**

**Percent Decrease = [(Orginal Value - New Value) / Orginal Value] × 100]**

Table 1. the absorbance with time

|  |  |  |  |
| --- | --- | --- | --- |
| Tube num | Tube 2 | Tube 3 | Tube 4 |
| Before | 0.218 | 0.207 | 0.357 |
| 5 min | 0.105 | 0.104 | 0.258 |
| 10 min | 0.045 | 0.037 | 0.299 |
| 15 min | 0.046 | 0.150 | 0.245 |

Table 2. the percent of reduced

|  |  |  |  |
| --- | --- | --- | --- |
| Tube num | Tube 2 | Tube 3 | Tube 4 |
| Before | 0 | 0 | 0 |
| 5 min | 51.83% | 49.75% | 27.73% |
| 10 min | 79.35% | 82.12% | 16.24% |
| 15 min | 78.89% | 27.53% | 31.37% |

Figure 1. the plot of reduced percent per minute

**Q.4**

Boiling chloroplasts were seen in tube 2. The enzymes required for photosynthesis denature when chloroplasts are cooked. DPIP cannot be converted to DPIPH due to the denaturation of the enzymes in the chloroplasts. The light processes of photosynthesis cannot occur without this reduction reaction. This tupe was inactive to compar the different factors on the action of chloroplasts enzymes.