

Fungus Growth as Affected by Varying Concentrations of Salts

R. B. ZUMSTEIN, Purdue University

Potato dextrose agar is a suitable medium for growing most fungi. The potato dextrose agar manufactured by the Digestive Ferments Company is more convenient to use and the results appear to agree with a comparable medium made up by the laborious process suggested by the formula for the making of potato dextrose agar. Digestive Ferments' P.D.A. was therefore used in this investigation.

My purpose was to determine whether the addition of mineral salts commonly believed to be of nutritional value would increase the effectiveness of P.D.A. as measured by colony diameter.

Technique

Phytophthora cactorum was selected as the test fungus. The salts added were potassium nitrate, potassium chloride, sodium nitrate, and sodium chloride, giving a variation of both cation and anion. Molar concentrations of 0.01, 0.1, 0.2, 0.4, 0.6 and 0.8 were used. Twenty grams of Difco P.D.A. were added to 500 cc. of each of the above molar concentrations of the four salts. The media were prepared in the usual manner, tubed, and sterilized in the autoclave at 15 pounds for 20 minutes. Petri plates containing the various media were then inoculated with 5 mm. disks of a pure culture of *P. cactorum*. Light was excluded from the plates except when measuring colony growth and recording results. Measurements were taken every 12 hours. The results are shown in Figures 1-5.

Summary and Conclusions

1. Difco potato dextrose agar is made more effective by the addition of mineral salts usually considered of nutritive value.

2. The effectiveness of each mineral salt is limited by the molar concentration.

3. During 192 hours of development, the 0.1 M concentration of sodium chloride and potassium chloride stimulated greater growth than 0.2 M concentration of these salts, with potassium chloride showing the greatest stimulation.

4. In the case of sodium and potassium nitrate, the 0.2 M concentration stimulated greater growth than the 0.1 M concentration of these salts, with sodium nitrate showing the greatest stimulation.

5. All of the media with 0.1 M and 0.2 M concentrations of salts gave better growth than did the control of Difco potato dextrose agar alone.

6. Molar concentrations of 0.6 and above caused a decreased growth, the growth decreasing with the increase in concentration.

7. Total average growth for each salt indicates that potassium chloride gave most growth for the average of the six concentrations.

8. The 0.2 M concentration gave the greatest average growth for the four salts used, with the 0.1 M concentration showing only 0.05 mm. less growth.

9. Of the six molar concentrations used, 0.1, 0.2, and 0.4 indicated a greater average growth with the four salts than did the control of Difco potato dextrose agar.

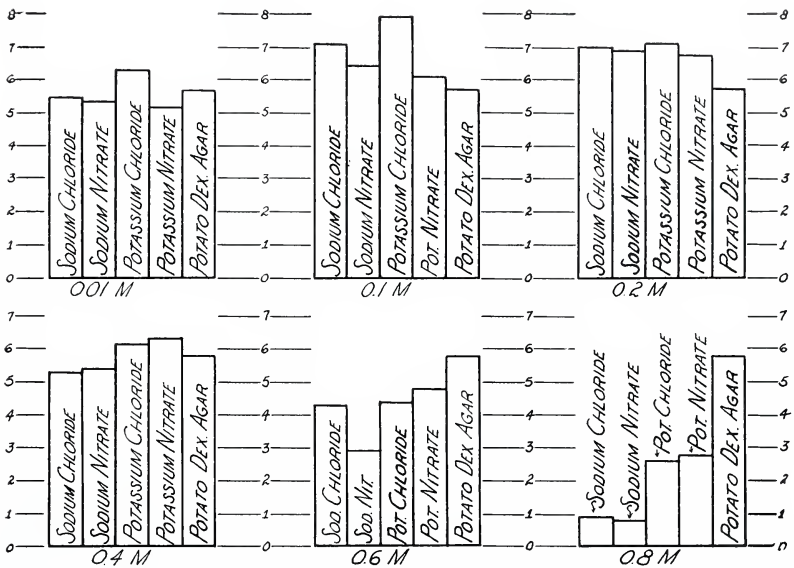


Fig. 1. Growth of *Phytophthora cactorum* for 192 hours on varying molar concentrations.