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Effect of Potassium Chloride on Rate of Penetration of Dyes.

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A previous paper¹ has shown that KCl decreases the rate of penetration of dyes into the sap of *Nitella*. (1) The results with a cell model, consisting of a non-aqueous substance placed between cresyl blue solution and the artificial sap, show that when chloroform is used the rate is not decreased when 0.1 M KCl is added to the sap, but when aniline is employed it is decreased somewhat. (2) The same difference is observed when chloroform and aniline are shaken with 0.1 M KCl and then placed between the 2 aqueous phases when the sap contains no KCl. (3) When *o*-anisidine in chloroform is employed as the membrane, cresyl blue can be made to penetrate into the sap rapidly whether the sap contains KCl or not, provided the external pH value is considerably higher than the internal, but KCl has some inhibitory effect. An acid dye like phenol red is capable of penetrating the sap rapidly whether the sap contains KCl or not.

In dealing with the rate of penetration of substances into the sap in the model it is essential to consider several properties of the constituents of the non-aqueous layer such as chemical constitution, acid or basic character, dissociation constant, and solubility in water.

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Importance of the Internal Phase Boundary in Penetration of Dye into the Vacuole.

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A cell model¹ was used consisting of chloroform placed between the dye solution and the artificial sap. R_0 = the rate of penetration of dye from the dye solution into the chloroform, and R_s = the rate of penetration of dye from the chloroform into the sap. These are obtained by determining the concentrations of dye in the aqueous phases during one hour. The absorption coefficients of the dye are

¹ Irwin, M., *PROC. SOC. EXP. BIOL. AND MED.*, 1926, **24**, 54.

¹ For description see Irwin, M., *PROC. SOC. EXP. BIOL. AND MED.*, 1928, **26**, 135.