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Effect of electrolytes on the rate of inactivation of bacteriophage during precipitation.

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In view of the ease with which the bacteriophage principle is adsorbed, it is in the majority of instances carried down in the sediment when lytic filtrates are caused to precipitate. In certain cases the lytic agent remains active in the sediment and can be recovered by solution of the latter, and in other cases after adsorption it becomes inactive.

For instance, if lytic filtrate, as ordinarily prepared, is precipitated by an excess of acetone, the bacteriophage can be recovered from the precipitate. However, if the NaCl concentration of the filtrate is increased to 1 per cent or over, 99 per cent of the phage is lost within a short time after the addition of acetone. The inactivating effect of salts with divalent cations is even more pronounced, and in certain instances, even 0.05 molar concentration of salt produces rapid and complete inactivation of lytic agent, when acetone is added. If salts with monovalent and divalent cations are mixed in suitable proportions, they antagonize one another in producing this effect. Similar antagonistic effect of salts is observed also in the case of alcohol precipitation of the bacteriophage. Thus, if a small amount of CaCl_2 is added to a lytic filtrate, as ordinarily prepared, it becomes considerably less subject to injury by the alcohol, in virtue of the fact that the effect of the NaCl contained in the filtrate is diminished by the addition of CaCl_2 .