3741

Action of Picric Acid on Living Protoplasm.

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Amoeba were injected with saturated aqueous and alcoholic (95%) solutions of picric acid. When an aqueous solution is injected in amounts equal to half the volume of the amoeba, no toxic effects can be seen. The amoeba is diffusely colored yellow, the intensity of color depending on the amount injected. If the injection be made so as to produce an injury at the point of insertion of the pipette, a local coagulation results. This coagulated portion is extruded by the amoeba, which then resumes normal activity and appearance, except for the yellow coloration.

When a saturated alcoholic solution is injected, there is a tendency for coagulation to occur. Unless an enormous amount is injected, the coagulated portion is localized, and is always extruded. The yellow colored amoeba then recovers completely. Hiller[1] has shown that an injection of small quantities of alcohol in concentrations above 80% will cause a local reversible coagulation. The picric acid dissolved in the alcohol apparently makes this coagulation irreversible.

These experiments indicate that picric acid solutions which definitely coagulate proteins in the test tube, have no such action on the interior of the living amoeba. However, if there is a local injury, the picric acid will act on the injured cytoplasm, resulting in coagulation.

In contrast to the non-toxicity to the internal healthy cytoplasm is the extreme toxicity of the picric acid when applied to the surface.

[1] Hiller, S., PROC. SOC. EXP. BIOL. AND MED., 1927, xxiv, 427.