

## Cocktails and Mixers: Ethanol-Modified Treatments for Iron-Gall Ink

The admixture of ethanol to aqueous treatment solutions is commonly used by conservators to mitigate the solubility of water-sensitive media. Prior research and direct observations by Library of Congress conservators have likewise indicated promising applications for the addition of ethanol to treat manuscripts with water-sensitive iron-gall ink. Building on the pioneering research initiated by the Netherlands Cultural Heritage Agency, which demonstrated the efficacy of calcium phytate and calcium bicarbonate to significantly slow the deteriorative mechanisms of iron-gall ink, a team of conservators and scientists at the Library of Congress sought to identify effective “cocktails,” or ratios of ethanol and other components in the preparation of phytate and bicarbonate solutions.

This talk presented the results of a multiyear study comparing treatments on artificially aged iron-gall ink, including washing in ethanol-water mixtures, varying proportions of ethanol in phytate and bicarbonate solutions, comparing ethanol-modified magnesium phytate with ethanol-modified calcium phytate, and ethanol-modified magnesium phytate at different pH values and solution concentrations. The presentation also discussed the impact of the research on future treatment choices and procedures for iron-gall ink on paper.

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