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Concerning the detection of pentose, formaldehyde and methyl alcohol.

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Bial's reagent, as ordinarily made up, does not keep. It is better to dissolve the orcinol and ferric chloride in alcohol, (6 gm. orcinol, 40 drops ferric chloride in 200 c.c. alcohol). Heat 5 c.c. of sugar solution with 15 drops of the above and an equal volume of fuming hydrochloric acid. A blue color develops if pentose is present.

When formaldehyde is subjected to this test a white precipitate is formed if 0.1 mg. per c.c. is present. Upon heating the precipitate turns brown. Acetaldehyde gives a precipitate which does not turn brown. With minute quantities of formaldehyde there is no precipitate but if the test is made strongly alkaline a strong green fluorescence is observed.

Orcinol can be used to detect methyl alcohol as follows:

Distill off the alcohol, using a Vigreux column and allowing as little water to pass over as possible. Place 1 c.c. of the distillate in a large hard glass test tube, which is free from scratches. Add 2 c.c. of 6.7 per cent. potassium dichromate solution and 2 c.c. of 62 per cent. sulfuric acid. Mix at once and let stand for 10 minutes. Add 15 c.c. of distilled water, mix and heat in boiling water for 10 minutes. Add 1 c.c. of a 0.5 per cent. aqueous solution of orcinol. Mix well and continue the heating for 30 minutes. If the original alcoholic distillate contained 5 per cent. of methyl alcohol a heavy white precipitate will appear after 5 minutes heating. With 0.5 per cent. methyl alcohol a faint precipitate is formed after heating for 30 minutes, or upon cooling. To show smaller quantities of methyl alcohol add a slight excess of sodium hydroxide, heat for a few minutes and filter. The filtrate will show a green fluoresence if traces of the methyl alcohol were present. Formic acid, acetone, furfurol, amyl alcohol and acetaaldehyde do not interfere with this test. Glycerine interferes if added to the distillate; acrolein interferes if present in considerable amount.