

NEW TESTS FOR THE IDENTIFICATION OF SPARTEINE
AND GUAIAIC.*

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The following test for sparteine, the alkaloid of broom tops (*Cytisus scoparius* Linné) will detect 0.0005 gramme of the alkaloid, providing that interfering substances are absent. The alkaloid is extracted with chloroform from a slightly ammoniacal solution, extracted from the chloroform by dilute sulphuric acid, this latter solution is made slightly ammoniacal and the alkaloid is reextracted with chloroform. Other methods of purification may be used as the case requires. The chloroform solution of the alkaloid is evaporated in a small beaker. To the alkaloidal residue a small amount of bromine water is added. A yellow precipitate, or, in the presence of large amounts of spartein, an orange-colored oil, forms but dissolves on warming. The solution is evaporated just to dryness on the water bath. While the beaker is still hot, it is inverted over concentrated ammonia water. A beautiful pink color forms if spartein was present.

The principal points to be noted in making this test are, first, that the beaker must be removed from the bath just as soon as the residue from the bromination is dry. If this residue is overheated too long, the test fails. If the beaker is removed before the residue is quite dry, the pink color will not appear; but the beaker may be replaced on the water bath after it has been held over the ammonia and the rest of the water evaporated, then the beaker may again be inverted over the ammonia and the color will appear. Second, the beaker must be hot when inverted over the ammonia.

This test is very similar to the murexid test for caffeine, except as to a few necessary differences in manipulation. The reaction, however, cannot be the same. An examination of the published formulas for sparteine and murexid shows that their groupings are too dissimilar for one to be formed from the other.

The usual test for guaiac is the blue coloration given by it with various oxidizing agents. This test will often fail with old preparations of guaiac, especially those containing ammonia, such as the ammoniated tincture of guaiac. The following test was found to be very delicate and to give positive results with such old preparations as no longer gave the blue oxidation test.

A suitable amount of the sample is extracted with chloroform, the chloroform is drawn off and separated into two portions. One of these is evaporated to dryness and the residue treated with concentrated sulphuric acid. An intense red coloration indicates guaiac; the same coloration being given also by some saponins and resins. The other portion of chloroform is shaken with about an equal volume of bromine water. Sometimes, in the presence of guaiac, a sudden flash of purple or blue shoots through the chloroform just as the bromine dissolves in it. The chloroform layer is then separated and evaporated to dryness. On treating the residue with concentrated sulphuric acid, a brilliant green indicates guaiac.

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