to direct the atmosphere through the trap flask during the early stages of evacuation. This assembly is inserted through the top female joint of the body.

The operation and efficiency of this modification are as described by Holzman. The advantages are a more rugged structure and a simpler construction.

As pointed out by Campbell and Pressman (*1*), it is convenient to stopper unused ports of the apparatus with sealed-off standard tapers, which may also be used for drying small samples of material.

### References


1. Campbell, D. H., and Pressman, D. *Science*, 1944, **99**, 285.
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## Sulfapyrazine Precipitated in Cancer Tissue upon Repeated Glucose Injections[1]


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Cancer tissue, unlike most normal tissues, produces large quantities of lactic acid aerobically. The acid production can be increased by intraperitoneal injection of glucose to the point that the pH of the extracellular fluid often drops below 6.4, as measured by glass electrode (*1*). This fact has enabled us to produce high local concentration in cancer tissue of a compound administered at a site distant from the tumor. The compound used, sulfapyrazine, was precipitated in the tumor presumably because it is less soluble at acid pH than at pH 7.4. Rats with Walker tumor 256 were used.[3]

As an example we give the concentrations of sulfapyrazine found in 2 implants of tumor 256 and in other tissues taken from a 400-g rat injected 3 days earlier with sulfapyrazine. The tumors were subcutaneous in the interscapular region. When they were 16 days old, the rat was given a single subcutaneous injection in the hind leg of 55% aqueous sodium sulfapyrazine containing 0.5 g of sulfapyrazine. During the 3-day period 14 g of glucose were given intraperitoneally in 50% solution. The rat was then killed by bleeding under ether anesthesia. The tumors were flecked with white precipitate and were necrotic throughout. Tissues were weighed, digested in alkali, aliquots were precipitated with *p*-toluenesulfonic acid, and the sulfapyrazine was determined colorimetrically by the Bratton and Marshall technique (*2*).

Serum taken from the heart at sacrifice contained 87 mg of sulfapyrazine/100 ml, the blood 93% as much, the small tumor (4.5 g) 330%, the large tumor (6.6 g) 280%, kidneys 100%, stomach (without forestomach) 95%, hide 94%, small intestine (upper 8 cm) 83%, heart 73%, lungs 72%, liver 69%, spleen 61%, leg muscle 55%, and testes 54%.

TABLE 1

Data on 250 Rats with Walker Tumor 256 Killed After Subcutaneous Injection of Sulfapyrazine

| Mg of sulfa injected/ 100 g body weight | Hours between sulfa injection and killing | Sulfa/g of tumor divided by sulfa/ml of serum | | | Sulfa/g of kidney divided by sulfa/ml of serum | | |
|---|---|---|---|---|---|---|---|
| | | >1 | <1 | Chi square* | >1 | <1 | Chi square* |
| | | No. rats | | | No. rats | | |
| *Repeated injections of glucose* | | | | | | | |
| 100–200 | 20–97 | 31 | 14 | 6.4 | 9 | 36 | 14 |
| *Single injection of glucose* | | | | | | | |
| 200–1,000 | 3–20 | 26 | 79 | 27 | 31 | 74 | 18 |
| *No glucose injected* | | | | | | | |
| 200–1,000 | 3–20 | 29 | 71 | 18 | 75 | 25 | 25 |

* All probabilities are less than 0.01 except for the smallest chi square, of which the probability is between 0.01 and 0.02.

Table 1 illustrates conditions in which similar concentration of sulfapyrazine in tumors did and did not occur. Highest concentrations were found in necrotic tissue. The quantities injected are generally lethal. The tumors had a median weight of 1.28% of the body weight, none more than 13%.

### References


1. Voegtlin, C., *et al.* *Nat. Inst. Health Bull. No. 164*, 1935.
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## Measurement of the Extract of Cornstalks


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By extract is meant the water-soluble content in terms of the Brix sugar scale (*3*). In its measurement the assumption is made that the water, as well as the soluble solids, is uniformly distributed throughout the sample. It is necessary to know the total moisture content, and the Brix reading of the juice at or near 20° C. If sufficient juice cannot be obtained, a known amount of water is mixed with the sample, the diluted juice is expressed, and its Brix reading measured. The method is rapid, does not require expensive equipment, and is far more easily operated than any of the other sugar estimation methods. Clark (*1*) has found that approximately two-


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[3] Tumor supplied through the courtesy of John B. Storer. Department of Pathology, University of Chicago.