

Cytochrome c reductase activity of the same preparations is not inhibited by hydroxylamine. Hydroxylamine does not reduce reduced cytochrome c. These inhibitions must be kept in mind when using hydroxylamine as a trapping reagent.

References

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Intragastric Temperature Variations in Man During Hunger

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The temperature of an area of the body or an organ must be looked upon as variable. Regional temperature is dependent upon rate of blood flow, oxygen consumption, and heat gained or lost through outside influences. The emotional state of the individual, by causing sweating, blushing, or blanching, has a direct bearing on regional temperature, as the local vascular response is regulated by nervous impulses.

Tissue respiration is directly dependent upon blood flow. It is, therefore, important to think of the body architecture as physiological anatomy. In the light of rational and conservative body response, the blood requirements of an organ or tissue at rest would not be equal to the requirements of the same structure during the different degrees of activity. It becomes obvious, therefore, that shunting or bypassing should be a normal physiological phenomenon. Blood is diverted to the tissue or organ with the greatest need.

Since a change in temperature follows upon any regional change in blood flow, and therefore oxygen exchange, experiments were devised to demonstrate the relationship between the vascular pattern and intragastric temperatures. It seemed reasonable to suppose, therefore, that, if the blood volume and rate of flow to an area were increased, the temperature would rise; and that consequently, if the blood volume and rate of flow were reduced, the temperature in the area would fall.

For this study we made a thermopile of iron constantan wires threaded through a gum rubber tubing. The tips of the individual thermocouples were insulated with *sauereisen* and then covered with a rubber plastic. This thermopile was made up of eight

thermocouples, separately insulated. The thermopile was conducted to a fixed cold junction in a Thermos bottle. Although these elements were insulated, they were immersed in an ice bath of distilled water. The Thermos bottle was grounded and the thermopile was connected by two leads, well insulated, to a specially constructed potentiometer with a 10-deg range and a 24-hr automatic recorder. The thermopile was then passed through the mouth into the stomach with little effort from the patient.

The position of the tip of the thermopile was checked by fluoroscopy. With the tube in place, the leads were attached to the potentiometer. The temperature of the cold junction was checked, and the potentiometer was activated. The moment the switch was released, the inked stylus automatically recorded on a circular rotating chart. The oral temperatures were taken periodically and charted (Table 1).

TABLE 1

Subject	Oral temperature (°F)	Initial intra-gastric temperature (°F)	Hunger-phase intra-gastric temperature (°F)
D.B.	98.6	101.0	98.8
R.H.	98.8	100.6	99.4
K.H.	98.6	99.8	98.8
J.W.	97.8	100.0	99.2
S.K.	98.6	100.6	99.2
R.B.	98.2	100.7	100.2
D.C.	98.0	101.0	99.3
B.M.	97.8	100.0	99.0

Our subjects were male and female first-year medical students. They were asked to register immediately prodromal symptoms of hunger and restlessness, and they were by and large quite cooperative.

As noted in Table 1, the oral temperatures consistently ran 1-3 deg lower than the intragastric temperatures. In our experiments it was noted that approximately ½ hr after the patient began to desire food, the temperature took a sharp dip to a lower level; shortly after the subject's "hunger pangs" had subsided, the temperature within the stomach returned to its previous plateau or near it.

It was postulated that this reaction took place because the muscular contractions of the stomach arrested the blood flow and led to a dearth of oxygen and a reduction of regional metabolism. This contention is based on the previously published work done at this institution on the neurovascular mechanism of the stomach (1, 2). It has been demonstrated that in the stimulated stomach the mucous membrane is kept in a state of anemia because of the shunting mechanism of the vascular bed.

References

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