Rigor Mortis Encyclopedia Article

Rigor Mortis

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Contents

Rigor Mortis Encyclopedia Article.....1

Contents.....2

Rigor Mortis.....3

Rigor Mortis

Rigor mortis (from the Latin for "stiffness of death") is the rigidity that develops in a body after **death**. This rigidity may begin shortly after death--within 10 to 15 minutes--or may not begin until several hours later, depending on the condition of the body at the time of death and on environmental factors, such as moisture content of the air and particularly temperature. A colder temperature promotes a slower onset of rigor mortis.

Typically, rigor mortis affects facial muscles first. Spreading to other parts of the body follows. The body will remain fixed in the rigid position until decomposition of **tissue** begins, about 24 to 48 hours after death.

Rigor mortis occurs because **metabolism** continues in muscles for a short while after death. As part of the metabolic activity, **adenosine triphosphate** (**ATP**) is produced from the metabolism of a sugar compound called **glycogen**. ATP is a principal energy source for muscular activity. So, as long as it is present, muscles continue to maintain their tone. As the store of glycogen is exhausted, ATP can no longer be made and its concentration decreases. One of the consequences of ATP depletion is the formation of abnormal links between two components of muscle tissue, actin and myosin. The leakage of **calcium** into the muscle cells also contributes to the formation of abnormal actin-myosin links. The abnormality produces the stiffening of the muscle, which persists until the links are decomposed.