Luminol Test

Procedure:

Step 3

10 ml luminol

1. Always wear safety goggles.
2. Rinse the beaker, the two graduated cylinders, and the bottle in the sink.
3. Using graduated cylinder 1, measure 10 ml luminol solution. Carefully pour it into the dark bottle. Look into the bottle:
   Does the luminol glow in the bottle?

4. Using graduated cylinder 2, measure 5 ml fake blood solution. Carefully pour it into the dark bottle. Look into the bottle:
   Is there light in the bottle? What color is it?

Step 4

5 ml fake blood

5. Carefully pour the contents of the bottle into the beaker.
   Is the solution the same color as the glow in the bottle?

6. Empty the beaker into the sink. Rinse the beaker, the two cylinders, and the bottle in the sink.

How do forensic scientists analyze invisible blood at crime scenes?

A Closer Look:

Forensic scientists spray luminol onto surfaces at crime scenes to detect invisible blood stains. Wherever the luminol touches blood, it glows, and the glow is bright enough to be photographed. While the results can be revealing, forensic scientists usually use luminol as a last resort because it can damage DNA evidence in blood.

How does it work? Luminol solution reacts with blood to produce light. The luminol solution contains both luminol ($C_8H_7N_3O_2$) and hydrogen peroxide (H_2O_2). The hydrogen peroxide reacts with the iron in blood to produce oxygen. This oxygen then reacts with the luminol, changing the structure of the molecule and temporarily adding energy.

When energy is added to molecules, it is often absorbed by electrons (tiny charged particles). By absorbing the energy and becoming “excited,” the electrons move to a higher energy level. Then, when the electrons return to their natural, "unexcited" level, they release the energy as visible light.

In this experiment the fake blood solution you used relies on copper, not iron, to help hydrogen peroxide supply oxygen to luminol.