This research used the Phenolhtalein Blood Detection Kit, produced by IDenta Ltd in Israël. The kit can be used until October 2021.

It was discovered that when the ampules are broken, the KM-test is activated. There is a vast quantity of literature about the shelf life of KM; and it indicates that its life span is approximatively 6 months. However, when the ampules are broken and put in the refrigerator, the following day they do not work properly anymore.

When using the ampules immediately after breaking them, the test works properly.

What I wanted to find out in this research was whether the test has a long shelf life, but the way I tested it, is not the right way to preserve it.

Method

In this research the KM-test, the tetrabasetest and the Combur 3 E test are compared to each other, using cow blood, mostly not diluted, so positive reactions are expected. The blood contained 8% EDTA. Everything is tested in triplicate. Whole blood is mostly used. Dilutions are used in aspects 3, 7 and 8 (1:1500). Specimen slides are used as a substrate, except for aspect 5.

Eight aspects are tested, which are divided into repeatability, sensitivity, robustness and specificity. The aspects tested are:

1. Stability over time of the indicative blood tests
2. Stability over temperature of the indicative blood tests
3. Limit of detection of the indicative blood tests
4. Effects of old and fresh blood on the indicative blood tests
5. Influence of porous and non-porous substrates on the indicative blood tests
6. Influence of indirect testing protocol and indirect testing protocol on the indicative blood tests
7. Specificity of the indicative blood tests
8. Influence of luminol and lumiscene on the indicative blood tests

Results

The results in aspects 1 and 2 show that the activation is not representative. The test obtained negative results after one day of breaking the ampules. Because of this it was not possible to compare it with the tetrabasetest and the Combur 3 E test.

For aspect 3, the KM-test did give a positive result in a blood dilution 1:1500, but 1:10.000 did not; indicating that the limit of detection is somewhere in between those dilutions. This was tested on glass substrate.

In aspect 4, ages? of fresh whole blood until 3 weeks old blood did all test positive with the Kastle-Meyer test. A clear pink colour was observed.

In aspect 5, a glass substrate (non-porous), wallpaper (semi) and cotton (porous) were tested with fresh whole blood. KM gave positive results. The cotton swab did absorb less cell material on the porous substrate and, therefore, the positive result was less intense.

In aspect 6, the same result was obtained as in aspect 5. Less material is absorbed with indirect testing. The morphological features of the fresh whole blood changes with direct testing.

In aspect 7, 10 substances were tested.

False-positives were tested without blood. There were two reactions obtained (NR= no reaction; 3/3 means 3 out of 3 tested positive). These reactions were blue-greyish and occurred after the first step.

	Tomato	Iron oxide	Broccoli	Green tea	Raspberry	Chocolate	Blue berry	Vitamin C	Patato	Bleach
KM	NR	NR	NR	NR	3/3	NR	3/3	NR	NR	NR

False-negatives were tested with a blood dilution of 1:1500. There were no reactions obtained (NR= no reaction). This shows that the KM-test did not react with the blood in the presence of these substances.

	Tomato	Broccoli	Green tea	Raspberry	Chocolate	Blue berry	Vitamine C	Patato
KM	NR	NR	NR	NR	NR	NR	NR	NR

In aspect 8, a dilution of 1:1500 blood was put on the specimen glass. It air dried for a week. KM tested positive. Then, a luminol solution was pipetted and KM tested positive again. Also with lumiscene KM tested positive. Furthermore, 0,04 ml blood dilution and 0,04 luminol were added, the same goes for lumiscene. In the field of crime scenes, the ratio is way less.

Conclusion

This kit works properly and can be used in the field. Its disadvantage is that the KM-test is not highly sensitive and that increases false-negative reactions. Also, after activation, the shelf life can reduce its effectiveness when not preserved properly. The repeatability is high, in all the tests performed for this research (everything tested in triplicate). The KM-test gave the same reactions in all triplicate, making its repeatability high.