

LUMINOL INDICATOR PAPER FOR HYDROGEN PEROXIDE DETECTION

Riabko D.N.*

Pharmaceutical Corporation "ARTERIUM", Kiev, Ukraine

The National University of Pharmacy, Kharkiv, Ukraine

dmitriy.ryabko@gmail.com

Luminol (hydrazide 3- aminophthalic acid) in the presence of minimal quantity of hydrogen peroxide (H_2O_2 , HP) shows high brilliance chemiluminescence, moreover this reaction are observed only in case of pH medium is more than 8 (Ponomarenko A.A., 1955). Light intensity could be raised significantly by adding of catalyst, as an example – hemoglobin. Because of high sensitivity of this reaction to HP it was possible to use it for the opening trace of HP in biological objects.

For the manufacture of luminol indicator paper 0,5% solution of luminol in 0,05 mol/L of aqueous sodium hydroxide was applied to the chromatographic paper by either wet-out process or by spray. By the same way hemoglobin solution with additive of disodium EDTA and trisodium phosphate in 0,05 mol/L of aqueous sodium hydroxide was applied. After that the paper was dried at the temperature approximately 40°C in a baker. For the HP detection the drop of investigated solution was applied. Because of that the bright blue chemiluminescence was observed. But such paper shows the less chemiluminescence in time that has been observed, which for real is enhanced by additive applying of drop of sodium hydroxide solution. Because of the damaging effect of the sodium hydroxide to the paper which has been made by abovementioned technology, subsequently, for the removing of hydroxide solution after the luminol had been apply the paper was placed in exsiccator which contained formic acid. After that the paper was removed and dried as usual.

For the HP by luminol indicator paper, produced by abovementioned technology, the next solutions was applied on a strip of paper: drop of the sample of HP and drop of sodium hydroxide solution. Very bright luminescence has been observed only after the sodium hydroxide solution had been added.

Prepared luminol paper during the storage for 1 year in different storage conditions didn't change their properties. During the test has been proved that HP in 0,0005-30% solutions might be detected by luminol paper. In this case peroxide's solutions with a concentration from 30 till 0,005% show the bright chemiluminescence after being applied to the luminol paper. At a 0,0005 % concentration of HP the faint, but absolutely clear luminescence was observed.

Thus, using the luminol indicator paper the HP in drop of solution at a dilution of 1:200 000 might be detected.

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