

Abstract

The study on development and validation of THC test kit aimed to improve the efficiency of the previous test kit in order to employ its usage and interpretation more easily. The THC test kit with a precise cut-off would be developed for corresponding to the Thai ministerial regulation of hemp that limits the THC content in hemp not more than 1.0% by dry weight. Thin layer Chromatography (TLC), the method which has high efficiency to separate and detect small amount of major cannabinoids in hemp was used. The previous THC test kit was also verified. The verification results indicated that the test kit had high specificity as well as good accuracy to detect THC in hemp without interference from the other plants with the limit of detection (LOD) of 0.1 microgram meaning that the test kit could detect the THC content containing in fresh hemp at the level of 0.05% by dry weight. The developed THC test kit with cut off at 0.8% by dry weight was validated and evaluated its efficiency. The THC content in hemp samples was determined by Gas Chromatography, a conventional standard method comparing with the developed THC test kit. By using paired sample T test, the results showed no significant difference ($p < 0.05$) and had positively correlation with coefficient of 0.803. The efficiency evaluation was performed by trained officers. The accuracy, sensitivity and specificity results were 98.5, 98.5 and 98.5 respectively. The Kappa coefficient of 0.97 indicates excellence acceptability and reliability of the test kit. The user satisfaction in easily usage, easily understood direction, easily interpretation, the appearance and the overall satisfaction of the test kit was also measured. The results established the good satisfaction.