

APAAN – A new precursor substance for the illicit production of amphetamine

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Abstract

Aims: Since the beginning of 2011 alpha-phenylacetonitrile (APAAN) has become an important precursor substance for the illicit synthesis of amphetamine and its importance is further increasing. APAAN has been observed in seizures in The Netherlands, Poland and Germany. One of the reasons for the increasing importance of APAAN is that the conversion into benzylmethylketone (BMK) can be done very easily by using a simple production method, which achieves high yields. The conversion of APAAN into BMK is predominantly performed in laboratories located in The Netherlands and Poland. Although it is widely used for illicit BMK production, from the forensic point of view there is still a lack of knowledge concerning APAAN, its purity, the different conversion processes, yields and characteristic impurities of BMK.

Methods: Here, we present a systematic forensic study of the chemistry of APAAN as a precursor substance of amphetamine. APAAN from different sources was characterized by several analytical techniques (e. g. GC/MS, LC/MS, ¹H-NMR) to obtain a chemical profile of the substance and its impurities. Furthermore, model syntheses have been conducted to achieve a valid database for calculation of the yield. Therefore, the most common conversion methods were investigated. Finally, the BMK produced was analyzed by GC/MS for characteristic impurities of the synthesis.

Results and Discussion: The characterization of APAAN from different seizures showed a purity range of the illicit material from 70-98%. The APAAN hydrolysis experiments were conducted using three different inorganic acids (sulphuric acid, hydrochloric acid, phosphoric acid). These experiments showed a yield that ranged from 50-75%. Finally, some characteristic BMK impurities were characterized.

Conclusion: A systematic investigation of APAAN was performed by characterizing APAAN impurities and determining BMK yields from different synthesis pathways. In addition, BMK obtained from the hydrolysis of APAAN was characterized via GC/MS.

Eine ausführliche Darstellung folgt im nächsten Toxichem Krimtech Heft.