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## ABSTRACT

**Background:** Fenethylline, a psychostimulant drug, often branded as *Captagon*, is a combination of amphetamine and theophylline. Since the cessation of its legal production in 1986, counterfeited products have been produced illicitly in south-east Europe and far-east Asia. Its profitable trade has been linked terrorist organizations, including ISIL. This study aims to reach up-to-date data, concerning the Captagon e-commerce and use in the Middle East.

**Methods:** A multi-staged and multi-lingual literature search was carried out. A list of pre-specified keywords was applied across medical and paramedical databases, web and Dark web, search engines, social communication media, electronic commerce websites, media networks, and the Global Public Health Intelligence Network database.

**Results:** The use of Captagon as a stimulant in terrorist settings has been marginally covered in the literature. Data can widely be retrieved from Google and AOL search engines, YouTube, and Amazon e-commerce websites, and to a lesser extent from Alibaba and eBay. On the contrary, Middle Eastern e-commerce websites yielded almost no results. Interestingly, the Dark web generated original data for Captagon e-commerce in the Middle East.

**Conclusion:** Further investigations are needed on the role that psychoactive drugs play in terrorist attacks and civil war zones. Unless a comprehensive methodological strategy, inclusive of unconventional methods of research, is implemented, it will not be feasible to face such a threat to humanity.

**Keywords:** Captagon; NPS; Fenethylline; Amphetamine; Theophylline; ISIL; Terrorism.

## INTRODUCTION

*Fenethylamine* also known as *amphetaminoethyltheophylline* and *amfetyline*, is a codrug of *amphetamine* and *theophylline* which behaves as a prodrug to both of the aforementioned drugs. It is marketed for use as a psychostimulant under the brand names *Captagon*, *Biocapton*, and *Fitton*. Fenethylamine was first synthesized by the German Degussa AG in 1961 as a part of an investigational programme on side effects of theophylline derivatives and particularly on cardiovascular, pulmonary and central nervous system and a strict prescription status only under medical supervision was requested three years later (Kristen, Schaefer, & Von Schlichtegroll, 1986; Katselou et al 2016).

The chemical structure (Fig. 1 and 2) of fenethylamine is 7-(2-a-methylphenyl-aminoethyl)-theophylline. Although there are no current FDA-approved indications for fenethylamine, it was mainly used as medicament, mainly during the 1960s and 1970s ,for the treatment of children with Attention Deficit Disorder (ADHD), narcolepsy, and depression. One of the main advantages of fenethylamine, is that, unlike other amphetamines, it does not significantly elevate blood pressure (Kikura & Nakahara, 1997). Theophylline is not an endogenous catecholamine but it is member of the xanthine family, it bears structural and pharmacological similarity to theobromine and caffeine, it is used mainly for the treatment of pulmonary conditions, including apnea (Barnes, 2003). Theophylline also increases cardiac contractility and heart rate; as a positive inotropic and chronotropic agent, increasing blood pressure, increasing renal and cerebral blood flow. Fenethylamine is metabolized by the body to its constituent drugs: amphetamine (24.5% of oral dose) and theophylline (13.7% of oral dose) (Ellison, Levy, Bolger, & Okun, 1970). However, fenethylamine was never approved for the medical uses in the United States, as no investigational new drug application was submitted to the Food and Drug Administration (Katselou M et al 2016). It was later listed as a Schedule I controlled substance in the United States, and became illegal in most countries in 1986 (United Nations Office on Drugs and Crime, 2016).

[Fig. 1 here]

[Fig. 2 here]

Although illegal, Captagon is now a major substance of misuse in Saudi Arabia, where it is used by a high majority (40%) of the overall substance-users in the country, mainly by young men aged 12-22 (Arab News, 2015). Additionally, Captagon is essentially used by militant groups, to increase fighting aggression, alertness and performance, similarly to amphetamines and methamphetamines (Defalque, & Wright, 2011; Van Hout & Wells, 2016). Further, because of

its psychostimulant and cognitive-enhancing properties, Captagon is also used by fighters of the Islamic State in Iraq and the Levant (ISIL, formerly known as ISIS) and other militant groups in Syria (Shahrour, 2013). It is important to mention that Al-Qaeda strictly adhere to Islamic law in terms of substance use and abuse (Van Hout & Wells, 2016). In Islamic law, otherwise known as Sharia, Muslims should abstain, under any condition, from drinking alcohol, and drug abuse, with exception of medical use of drugs (Sattari, Mashayekhi, & Mashayekhi, 2012). Therefore, ISIL, unlike Al-Qaeda in relation to drug use and abuse, is being selective when it comes to Sharia law, to justify its means. An analogous example, is the use of Khat in Yemen. The use of Khat in Yemen pre-date Islam itself (Nichols, Khondkar, & Gibbons, 2015). Preliminary forensic reports from the famous Paris attacks, which took place in November 2015, indicates that Captagon might also have been used by the incriminated Islamic State fighters (Barker, 2015). Although still not confirmed by forensic tests (Lines, 2015). It is known that ISIL attackers are supplied by a black-market of *amphetamine* supplements (McConnell & Todd, 2015). In an interview with the CNN, a 19-year-old ISIL fighter said: *They gave us drugs; hallucinogenic pills that would make you go to battle not caring if you live or die* (McConnell & Todd, 2015).

The side effects are similar to other types of amphetamine type stimulants (ATS). However, hazardous side effects, that are also incompatible with a war zone requirement, include: psychosis, visual distortions and hallucinations, acute heart failure, acute myocardial infarction (AMI), and epileptic fits (Shufman & Dickman, 1999). AMI, has been increasingly reported since the beginning of the civil war in Syria (2011), the Middle East and in Turkey (Arslan, Zeren, Çelikel, Ortanca, & Demirkiran, 2015). The first case of AMI in association with Captagon, was documented in a 21-year old man (Ulucay, Kargı, & Aksoy, 2012).

Nearly a decade ago, data from the International Narcotics Control Board (INCB) and the Interpol, revealed that the drug has been produced illicitly in illegal laboratories mainly based in south-eastern Europe, specifically in Turkey, Bulgaria, Slovenia, Serbia, and Montenegro (Drug Enforcement Admin, US Department of Justice, and United States of America, 2003). From here it has been trafficked to its main consumer markets on the Arabian Peninsula, primarily in Saudi Arabia, for later consumption in the Middle East (Drug Enforcement Admin, US Department of Justice, and United States of America, 2003). However, in recent years, there has been strong

indicators based on statistical data, that Captagon illicit production has shifted to the region of the Middle East and the north of Africa, primarily Syria, Iraq, and Saudi Arabia (Europol, 2011).

Overall, in 2002, more than 1.4 million tablets were seized in Syria, and 107.5 kilograms of the drug were seized in Turkey (Drug Enforcement Admin, US Department of Justice, and United States of America, 2003; Herbert, 2014). The illicit trade is rapidly increasing and more recently in 2016, 8.8 million pills, mainly containing Captagon, were found in Egypt (GPHIN, 2016a), while 11,000 Captagon tablets were seized in the city of Al-Nasiryia (January 2016), a city to the southeast of the Iraqi capital Baghdad.

Toxicological tests revealed the presence of contaminants such as amphetamine, methamphetamine, procaine, caffeine, quinine, metronidazole, theophylline, among others, besides the absence of fenethylamine, as seen in table 1 (Alabdalla, 2005; Al-Hussaini, 1996). As the current civil war and terrorism in Syria continues, the demand for illicit drugs, including Captagon is very high. This substance is also diffused in Iraq, Jordan, Kuwait, and Qatar (Herbert, 2014). However, the content of products sold illicitly as Captagon, still need to be determined. Alabdalla (2005) who carried out chemical analysis of counterfeit Captagon tablets from 124 seized batches across Jordan, confirmed the absence of fenethylamine. The analysis was done via Gas Chromatography–Mass Spectrometry (GC–MS). The counterfeited nature of the Captagon tables seized in Europe, was also confirmed by the analysis of seized Captagon tablets between 2008 and 2011, which indicated that it no longer contained fenethylamine, but amphetamine in combination with caffeine and other substances (Europol, 2011).

Overall the Captagon trade in the Middle East, Arabian Gulf region, and the north of Africa, is currently a prolific illegal trade with a high profit margin (Al-hemiary, Al-diwan, Hasson, & Rawson, 2014; Barker, 2015; Herbert, 2014;) as it can be clandestinely synthesized, using simple and inexpensive chemistry techniques and raw materials (Barker, 2015; Katselou et al 2016) and its illicit market contributes in funding global terroristic organizations, including ISIL (GPHIN, 2016b).

[Table 1 here]

## METHODS

Four databases were searched: PubMed, the Cochrane Library, Scopus and Google Scholar. A list of pre-specified keywords was utilized across these databases to generate *Search Engine Results Pages* (SERPs). The literature searches were conducted in English, Arabic and Italian, Spanish, Portuguese from October 3rd 2015 to May 26<sup>th</sup>, 2016 from Baghdad-Iraq via Earthlink Telenet Internet Service Provider (ISP) as well as from the UK and Italy.

Given the limited peer-reviewed literature available on the use of Captagon in conflict areas, further exploratory qualitative searches were carried out by consulting a wide range of websites, drug fora and other online resources (e.g. e-commerce, e-newsgroups, chat-rooms, videos, e-newsletters, and bulletin boards) in both English and Arabic, using the keywords: *Captagon*, *01 pills*, *Fenethylamine*, *Counterfeit Captagon*, *Counterfeit Amphetamine*, *Inferior Amphetamine*, and *Amphetamine*. These keywords were also applied on Google and AOL search engines, YouTube, Google Trends, three global e-commerce websites (Alibaba, Amazon, and eBay), and seven regional (Middle East) e-commerce websites.

The Dark web was also scrutinized for details concerning Captagon e-commerce in Iraq, Syria, and the United Arab Emirates (UAE). Dark Web e-markets, including AlphaBay e-market, utilize technologies to provide anonymity for users when they purchase items, these technologies include: the use of specific or customized internet browsers, passwords specific to each e-market, secured routing protocols, virtual private networks (VPN), Internet Protocol Masking (IP masking), and Bitcoin payment system (Alphabaymarket.com, 2015a; Chen, 2007; Chen, 2012). Additional media sources and the database of the Global Public Health Intelligence Network (GPHIN) were also consulted. This is a secure Internet-based early warning system that gathers preliminary reports of public health significance by monitoring global media sources near 'real-time', 24 hours a day, seven days a week basis. GPHIN is operated by the Public Health Agency of Canada and monitors news sources and websites across the globe in nine languages (i.e. English, French, Farsi, Portuguese, Arabic, Russian, Spanish and Chinese simplified/traditional) (Young, Dubeau, & Corazza, 2015). While a series of algorithms are used and adjusted to capture relevant data, the analysis of the data was carried out manually by a multidisciplinary and multilingual team of analysts.

Data were analyzed using thematic analysis focusing on users experiences and perspectives and qualitative appraisal tools (e.g. CASP), when appropriate. Data visualization was carried out

using Microsoft Excel 2016. Ethical approval for this study was granted by the School of Pharmacy Ethics Committee, University of Hertfordshire, Hatfield, United Kingdom (November 2013; PHAEC/10-42).

## **RESULTS AND DISCUSSION**

38 studies emerged from the literature search were considered relevant and consulted for further investigation. Among these, five were found to be of low scientific evidence and therefore excluded. Additional data was also carefully selected from the analysis of over hundreds of online media networks and other online resources.

A wide range of information on Captagon could openly be retrieved from Google and AOL search engines, YouTube, and Amazon, where the substance was illicitly advertised and sold as a powerful psychostimulant in the form of tablets, pills and powder (Arab News, 2015; Freeman, 2014; Herbert, 2014; Kalin, 2014; McConnell & Todd, 2015; United Nations Office on Drugs and Crime (UNODC), 2010). Retrieved data were heterogeneous, which included: drug purchase materials, books, documentaries, chemical analysis data, and other irrelevant results.

Interestingly, the Dark web, mainly AlphaBay, generated most of the original data for the region of the Middle East, specifically Syria, Iraq, and UAE. In these countries, ATS are not accessible from pharmacies without an official medical prescription. Therefore, in such regions, the e-commerce is even more crucial in the search, distribution, and acquisition of these products in an illicit way. Additionally, it must also be noted that in regions of conflicts and civil war as in Syria and Iraq, the e-commerce is either highly restricted or disabled because of the fragile Internet-infrastructure. Therefore, in areas of conflict, traditional trading of Captagon is the most prominent method. On the contrary, e-commerce plays a major role in more stable areas within the conflict zone, in which the Internet and e-commerce websites are still accessible and operational. This has been confirmed by the fact that most of the relevant data emerged from seven popular e-commerce websites in the Middle East and the North of Africa (Souq.com, Souqelkhaleej.com, Kingsouq.com, Halalat.com, Aliexpress.com, Araboo.com, and Sa.pricena.com).

Concerning the global e-commerce websites (Table 2, Fig. 3), both Alibaba and eBay were implementing efficient control policies to prevent e-commerce of *Captagon*. For instance, *Alibaba* website displayed an automatic message, when prompted with certain keywords in relation to *Captagon*; the message declared that the sought keywords and related search is

prohibited under Alibaba's website control policies. On the contrary Amazon, allowed easy access to *amphetamines* and ATS, although sometimes the keywords yielded SERPs, that were irrelevant to neither *Captagon* nor ATS.

[Table 2 here]

[Fig. 3 here]

Concerning the regional (Arabic) e-commerce website in the Middle East, Persian Gulf, and the North of Africa (Table 3, Fig. 4), most websites yielded no SERPs or very few and non-relevant SERPs. (Liginlal, Gopinath, Ahmad, & Meeds, 2014; Liginlal, Rushdi, Amhad, & Meeds, 2013). We observed in previous studies that drug related information on portals in Arabic and Farsi tend to be more hidden and disguised (Corazza et al., 2014; Bigdeli et al., 2013).

[Table 3 here]

[Fig. 4 here]

Relevant results emerged from the Dark web searches on darknets, which have an increased role in drug trafficking (Chen, 2011; Chen et al., 2008; Cuthbertson, 2015; Gabriel, 2016). AlphaBay Market, based in Russia, is one of the darknet markets operating in the sectors, which permits the sale of many illegal items. (Alphabaymarket.com, 2015a; Chen, 2007; Chen, 2012). The keywords used by the researchers across the Dark web, resulted in data from only two countries in the Middle East; UAE and Syria (Table 4, Fig. 5). All results, were found on AlphaBay market, and traced back to the same vendor (Alphabaymarket.com, 2015b, 2015c). The vendor has specialized in selling Captagon tablets only, and the supply manufactured in Dubai, is listed as *unlimited*. The price range was from 16.30 to 217.28 USD, depending on the quantity of sought Captagon tablets. Concerning Captagon for Intravenous use, there were no data on the Dark web. AlphaBay seems to be the largest market for the region of the Middle East, concerning the Captagon e-commerce, while Valhalla market is the largest market for Europe, and Netherlands in particular (table 5).

An illicit online pharmacy, located in India, also provided access for Captagon e-commerce (Captagon 50 mg pills rather than tablets), without the need of prescription and the price was variable according to the number of purchased pills, and up to 360 pills at a price of 144 USD (Anonymous Pharmacy, 2015). This online pharmacy can be reached on the surface web/internet



(Liginlal et al., 2014). In comparison with AlphaBay market, both websites, use the same payment system on AlphaBay, known as *Bitcoin Payments*, which make the payment identity anonymous. The price is 20-24 times less expensive than in the AlphaBay e-market.

Google Trends also confirmed a very significant increased interest in Captagon with a pick in late 2015, compared to previous years (2006-2014) orientating in Belgium, France, Germany, Turkey and Italy (table 6, Fig. 6). This shows an indicative correlation with the Paris terror attack, Captagon and ISIL, while excluding Al-Qaeda.

[Table 4 here]

[Table 5 here]

[Fig. 5 here]

[Fig. 6 here]

[Table 6 here]

Described effects from users include a sense of 'fearless', feelings of pleasure, increased energy and alertness as well as a reduced need for sleep and food (Drug Enforcement Admin, US Department of Justice, and United States of America, 2003). Overall, Captagon users report feelings of wellbeing, increased productivity, alertness, intense appreciation of surrounding sounds and colors, visual distortions; its effects are reportedly intense, long lasting and slowly released (Bluelight.org, 2014). In order to moderate the euphorogenic and activating effects of the drug, Captagon is also taken in combination with cannabis and alcohol. Withdrawal symptoms may include depression and headache (Bluelight.org, 2004).

Number of side effects have also been identified These include . an increase in heart rate, body temperature, respiration and blood pressure as well as extreme depression, neurological excitation, lethargy, sleep deprivation, heart and blood vessel toxicity and malnutrition on a longer term (Drug Enforcement Admin, US Department of Justice, and United States of America, 2003). Hazardous side effects included: psychosis, visual distortions and hallucinations, acute heart failure, acute myocardial infarction (AMI), and epileptic fits (Shufman & Dickman, 1999; Ulucay, Kargi, & Aksoy, 2012).

Oral tablets and pills can be used intravenously for a more immediate effect usually by crushing the tablets/pills and heating them up (Drugs-Forum, 2013). Similarly, the pills might be converted into a syrup, although side-effects may include gastric-duodenal peptic ulcers, and GIT upset. Crushing and injecting pills is hazardous as may lead to seizures and cardiac arrhythmias as well as other adverse effects in presence of unknown adulterants and fillers.

## CONCLUSIONS

Further investigations are needed on the use of psychoactive drugs in terrorist attacks and in civil conflict zones. Data are essential to influence a prompt policy response. Interventions cannot be limited to the Middle East and cannot be confined to the Syrian war. Its dimension is much wider and it has already reached the EU via refugees' migration and the recent Paris and Brussels attacks. Even more importantly the role played by the Internet for the commercialization of the drug, especially the Dark Web, must be acknowledged. As we have seen, Captagon is well advertised and sold online with no need of prescription by illicit online pharmacies and websites internationally. Captagon is used to feel fearless and increase aggressiveness, alertness and enhance other cognitive functions especially in conflict areas. While the demand is expanding in areas of conflict, its trade it is becoming a profitable market for ISIL and other criminal organizations. Overall, Captagon is a dangerous psychostimulant and novel strategies should be implemented to design adequate policy responses able to fight its expansion in parallel with associated forms of extremism that not only a threat for our governments but also for humanity.

## LIMITATIONS

Internet sources: One could wonder about the limitations of carrying out a risk of misuse assessment of a drug while taking into account the online available information; in fact, it may be inappropriate to trust data obtained from the Internet without independent verification. However, in the absence of relevant peer-reviewed data, this seems to be the only valid method to obtain preliminary information about new and emerging phenomena; moreover, the Web monitoring has proved that Internet is an important source of information (Google Trends, 2015).

Language: The study was carried out in English, Arabic, Italian, Portuguese and Spanish. Additional languages would have likely increased the number of relevant references and provided timeliness of detection where Captagon use was associated with countries speaking a different language.

Query: a number of set key words were used for the searches and these did not include street names used to name the drug.

Despite the limitations, this study indicates the importance to consult also unstructured sources of information when monitoring the emergence and harm of associated with illicit substances, especially in conflict zones. This also allows a better understanding of users' point of view about the effects of drugs, while keeping their identity anonymous. Population surveys as well as the collection of data from medical monitoring systems (e.g. hospitals, emergency units) and other forensic sources might also not be appropriate as countries facing a conflict might not have the resources and the capabilities to implement them (Shahrour, 2013).

**CONFLICT OF INTEREST**

The authors have no conflict of interest to declare.

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Figures

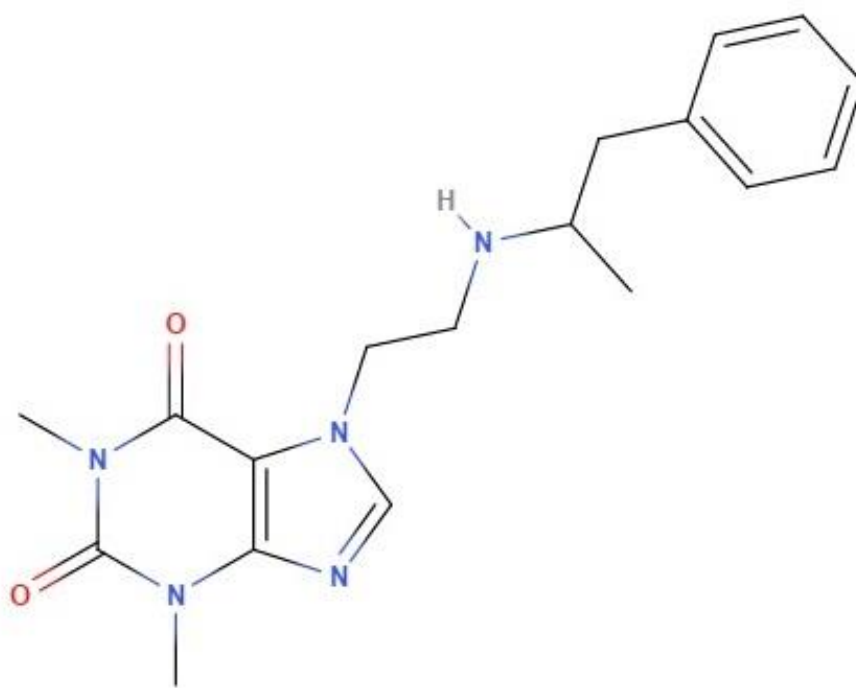


Figure 1. Molecular structure of Fenethylamine.

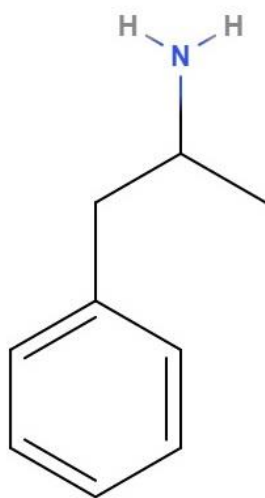


Figure 2. Molecular structure of Amphetamine.

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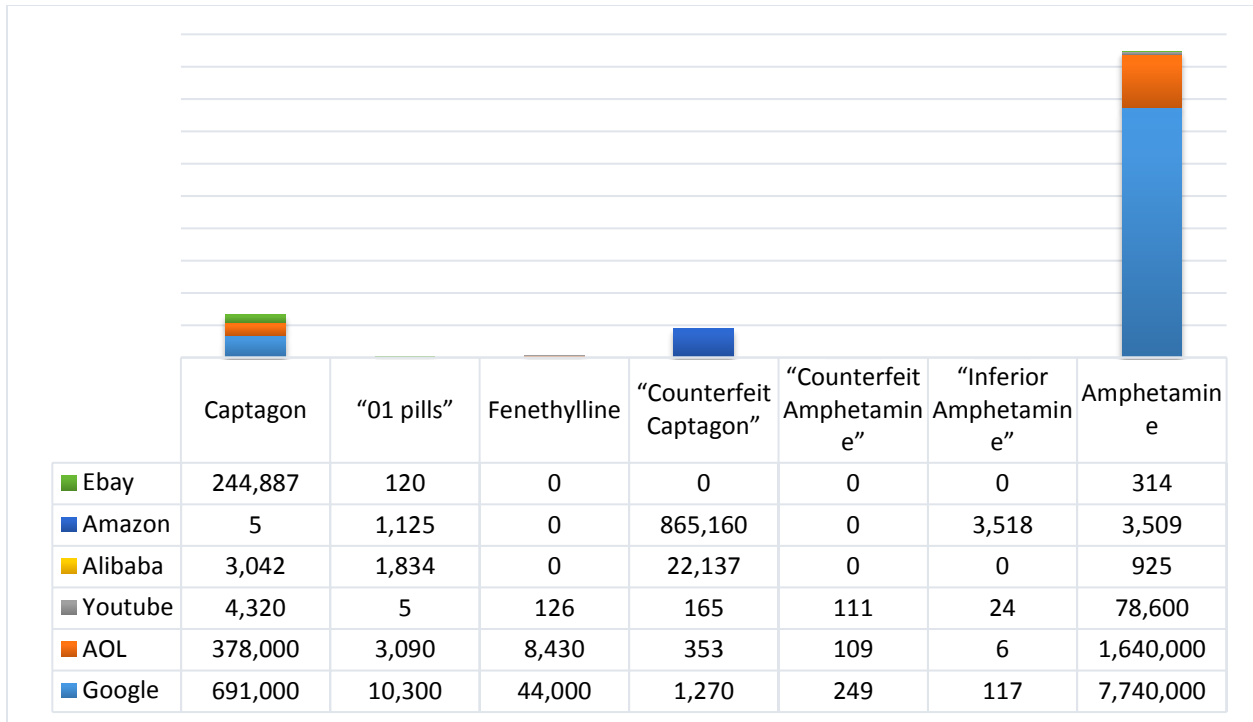


Figure 3. Component Bar chart for the major controllers of *Captagon* e-commerce

### Captagon: Use and Trade in the Middle East

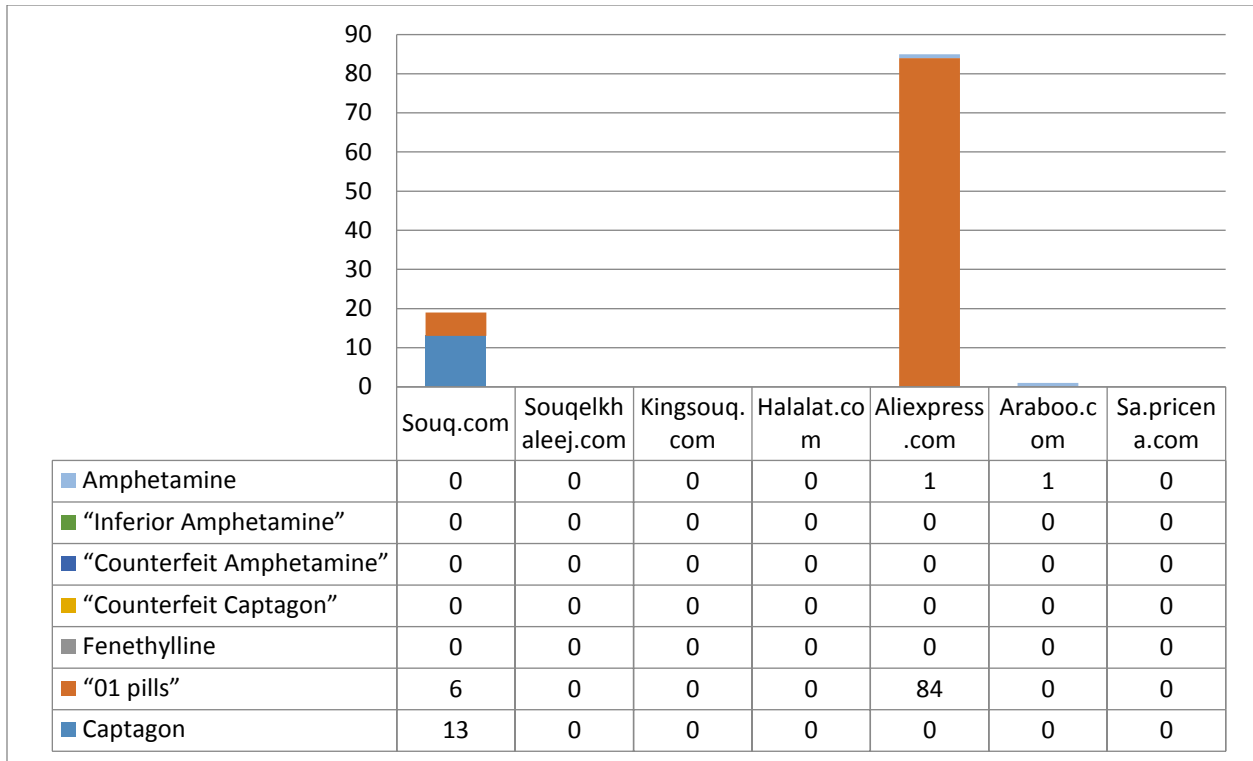


Figure 4. SERPs results for regional *Captagon* e-commerce website.

### Captagon: Use and Trade in the Middle East

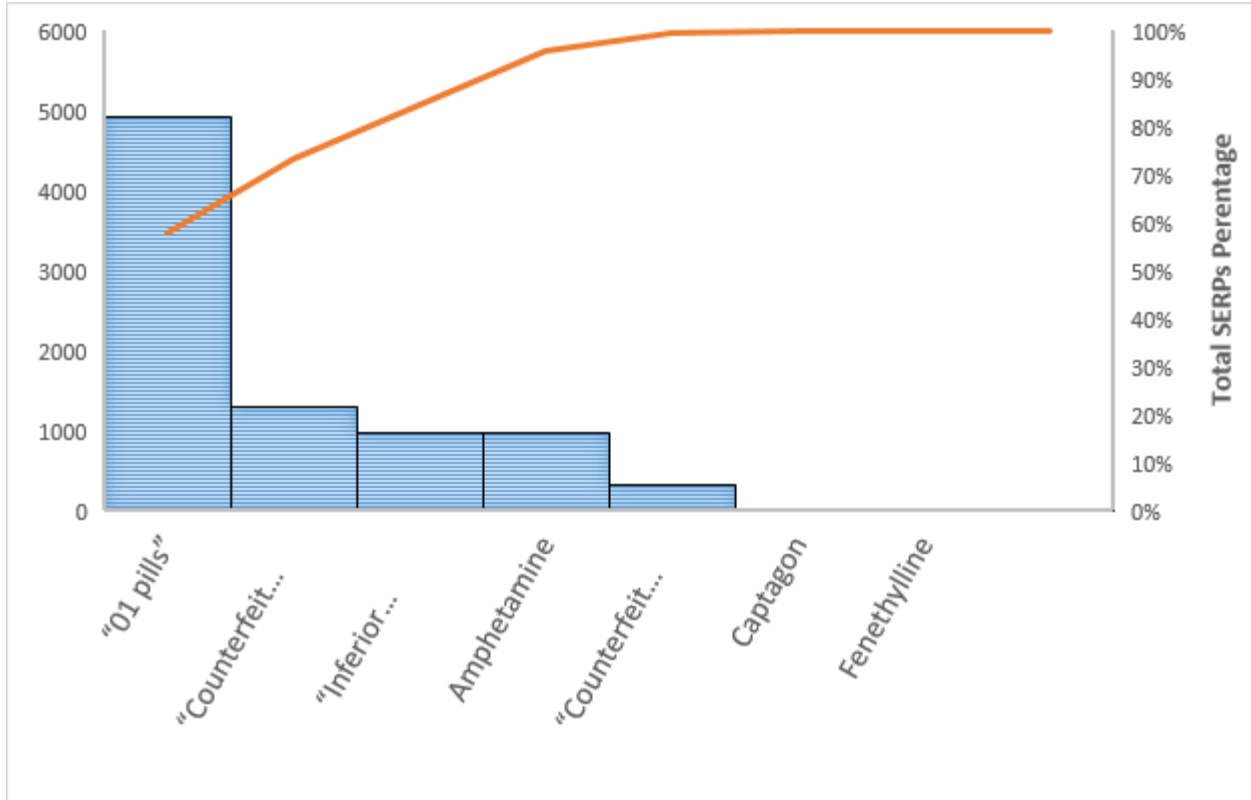


Figure 5. SERPs versus Keywords, on AlphaBay market (Dark web).

### Captagon: Use and Trade in the Middle East

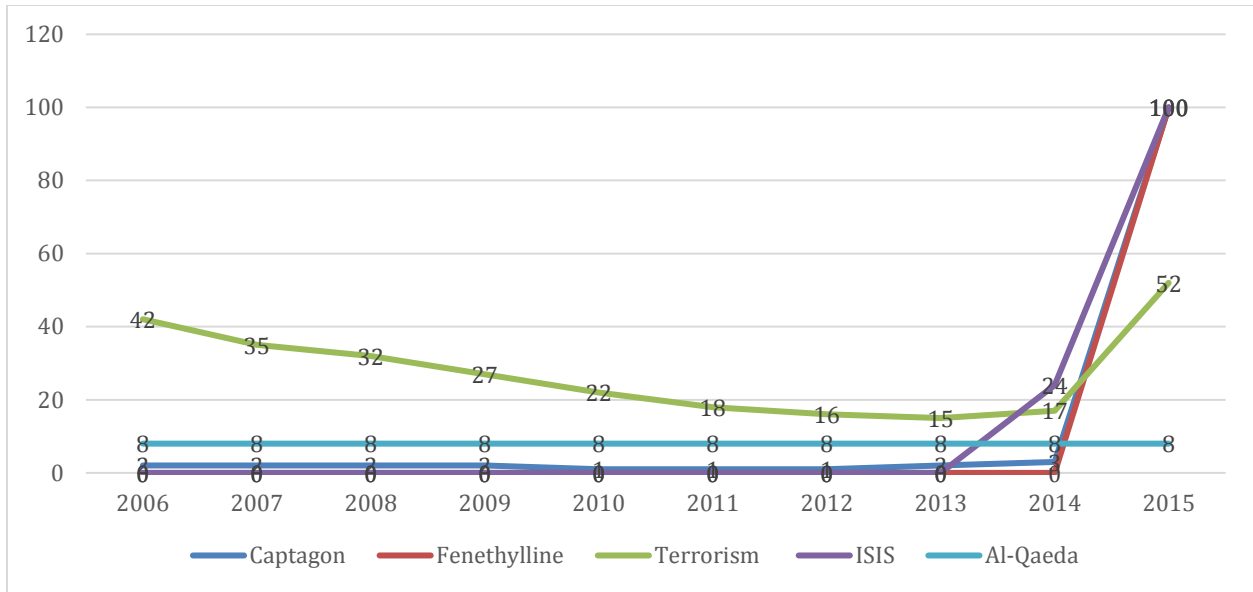


Figure 6. Reconstructed data from Google Trend (Google Trends, 2015).

## Tables

<b>Substance</b>	<b>Pharmacology</b>
Amphetamine	Stimulant
Methamphetamine	Stimulant
Ephedrine	Sympathomimetic
Metronidazole	Anti-amebic
Caffeine	Stimulant
Theophylline	Vasodilator
Chlorphenamine	Anti-Histamine
Procaine	Local anesthetic
Trimethoprim	Antibiotic
Chloroquine	Anti-malarial
Quinine	Anti-malarial

Table 1. Ingredients of counterfeit-*Captagon* (Alabdalla, 2005).



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Source	Keywords	SERPs	Total
Google	Captagon	691,000	8,486,936
	01 pills	10,300	
	Fenethylamine	44,000	
	Counterfeit Captagon	1,270	
	Counterfeit Amphetamine	249	
	Inferior Amphetamine	117	
	Amphetamine	7,740,000	
AOL	Captagon	378,000	2,029,988
	01 pills	3,090	
	Fenethylamine	8,430	
	Counterfeit Captagon	353	
	Counterfeit Amphetamine	109	
	Inferior Amphetamine	6	
	Amphetamine	1,640,000	
YouTube	Captagon	4,320	83,351
	01 pills	5	
	Fenethylamine	126	
	Counterfeit Captagon	165	
	Counterfeit Amphetamine	111	
	Inferior Amphetamine	24	
	Amphetamine	78,600	
Alibaba.com	Captagon	3,042*	27,938
	01 pills	1,834*	
	Fenethylamine	0**	
	Counterfeit Captagon	22,137*	
	Counterfeit Amphetamine	0**	
	Inferior Amphetamine	0**	
	Amphetamine	925***	
Amazon.com	Captagon	5*	873,317
	01 pills	1,125	
	Fenethylamine	0	
	Counterfeit Captagon	865,160	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	3,518	
	Amphetamine	3,509	

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	Captagon	244,887*	
	01 pills	120*	
	Fenethylamine	0	
Ebay.com	Counterfeit Captagon	0	245,321
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	314*	

Table 2. SERPs result in relation to the major controllers of *Captagon* e-commerce.

\*Irrelevant SERPs results. \*\*Anti-PIEDs policy \*\*\*SERPs generated were for medical devices/kits for measurement of body levels of *amphetamine(s)*.

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Regional & Arabic e-commerce websites	Keywords	SERPs	Total
Souq.com	Captagon	13*	19
	01 pills	6*	
	Fenethylamine	0	
	Counterfeit Captagon	0	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	0	
Souqelkhaleej.com	Captagon	0	0
	01 pills	0	
	Fenethylamine	0	
	Counterfeit Captagon	0	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	0	
Kingsouq.com	Captagon	0	0
	01 pills	0	
	Fenethylamine	0	
	Counterfeit Captagon	0	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	0	
Halalat.com	Captagon	0	0
	01 pills	0	
	Fenethylamine	0	
	Counterfeit Captagon	0	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	0	
Aliexpress.com	Captagon	0	85
	01 pills	84**	
	Fenethylamine	0	
	Counterfeit Captagon	0	
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	1*	

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Araboo.com	Captagon	0	
	01 pills	0	
	Fenethylamine	0	
	Counterfeit Captagon	0	1
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	1***	
Sa.pricena.com	Captagon	0	
	01 pills	0	
	Fenethylamine	0	
	Counterfeit Captagon	0	0
	Counterfeit Amphetamine	0	
	Inferior Amphetamine	0	
	Amphetamine	0	

Table 3. SERPs result for regional controllers of *Captagon* e-commerce.

\*Irrelevant SERPs. \*\*Some SERPs were irrelevant. \*\*\*A generated SERP for an article related in a foreign language on the topic of *Amphetamine(s)*.

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Source	Keywords	SERPs	SERPs In Arabic Countries		Total SERPs for Arabic Countries	Other Countries	
Grams	Captagon	9	4	Syria	1	24	UK
				UAE	3		Philippines
	01 pills	4934	0	Syria	0		China
				UAE			Poland
	Fenethylline	9	4	Syria	1		Canada
				UAE	3		Australia
	Counterfeit Captagon	333	4	Syria	1		Finland
				UAE	3		Sweden
	Counterfeit Amphetamine	1294	4	Syria	1		Portugal
				UAE	3		Spain
	Inferior Amphetamine	974	4	Syria	1		Switzerland
				UAE	3		Hungary
Amphetamine	962	4	Syria	1	Latvia		
			UAE	3	Afghanistan		
					Austria		
					Czech Republic		
					Luxembourg		
					Norway		

Table 4. SERPs versus Keywords, on AlphaBay market.

## Captagon: Use and Trade in the Middle East

<b>Dark web market</b>	<b>Number of results</b>	<b>Countries of origin/manufacture</b>	
Valhalla	5	Netherlands	5
AlphaBay	4	UAE	3
		Syria	1
Hansa Market	4	Europe	4

Table 5. Online markets for Captagon e-commerce, on Dark web.

## Captagon: Use and Trade in the Middle East

Keyword	Year									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Captagon	2.58	3.09	1.58	1.92	1.58	1.08	1	1.58	2	13.92
Fenethylamine	0	0	0	0	0	0	0	0	14	21.33
ISIS	0	0	0	0	0	0	0	2.17	28.59	10.42
Al-Qaeda	9.45	7.5	5.92	4.92	4.75	6.33	4.33	4.67	4.42	4.42

Table 6. Average interest for years 2006-2015 (Google Trends, 2015).