Life after Ibogaine

An exploratory study of the long-term effects of ibogaine treatment on drug addicts

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Contents

INTRODUCTION

Ibogaine, is a psychoactive alkaloid derived from the roots of the rainforest shrub *Tabernanthe Iboga*. The native population of Western Africa uses ibogaine in low doses to combat fatigue, hunger and thirst and in higher doses as a sacrament in religious rituals (Fernandez 1982). The knowledge of the use of ibogaine for the treatment of drug dependence has been largely based on reports from groups of self-treating addicts that the drug blocked opiate withdrawal and reduced craving for opiates and other drugs for extended time periods (Kaplan, Ketzer et al. 1993; Sheppard 1994; Alper, Lotsof et al. 1999; Alper, Beal et al. 2001). Scientific research concerning ibogaine is concentrated in various fields including pharmacological, anthropological and to a limited amount clinical studies (Goutarel and Gollnhofer 1997; Dzoljic, Kaplan et al. 1988; Glick, Rossman et al. 1992; Judd 1994; Popick and Glick 1996; Maisonneuve, Mann et al. 1997). In addition, a number of case studies have been published (Sisko 1993).

Due to the relatively slow progress of the research on ibogaine in the academic world, the knowledge gathered focuses mostly on the anthropological, social historical, pharmacological, physiological, immediate and the short term effects on drug use. Very little is known about the medium and the long term effects of the treatment. Moreover, the information that is available, concentrates mostly on only one outcome of the treatment, namely whether the addict ceases the use of drugs or not. There is little research concerning the effect of ibogaine treatment on the wider aspects of the addict's life after the treatment with ibogaine, such as the medical condition and the psychological and social well-being. This report describes the methodology and preliminary results of a pilot study of the long term effects of ibogaine treatment on drug addicts. The effects explored include, as mentioned above, not only the drug use behavior, but social, psychological, medical and legal aspects of the addicts' life. This interest in a broad range of effects is based on the theory that addiction is a multidimensional construct that includes not only a drug use, abuse and dependence dimension, but other dimensions of medical, psychological and social well-being (Hendriks, Kaplan Charles D et al. 1989; Hendriks, van der Meer et al. 1990).

BACKGROUND

Pharmacology

Ibogaine (12-Methoxyibogamine) is one of the at least twelve alkaloids found mainly in the cortex of the root of a plant called Tabernanthe Iboga, which grows in the forests of West-Africa, including Gabon and Congo. Its molecular formula is $C_{20}H_{26}N_{20}$. Ibogaine appears to have a novel mechanism of action that differs from other existing pharmacotherapies of addiction, and this mechanism of action does not appear to be readily explained on the basis of existing pharmacological approaches to addiction (Alper, 2001). Ibogaine's effects may result from complex interactions between multiple neurotransmitter systems rather than predominant activity of a single neurotransmitter (Popik & Skolnick, 1999). Ibogaine has micro molar affinities for multiple binding sites within the central nervous system, including NMDA, kappa- and mu-opioid and $sigma_2$ receptors, sodium channels, and the serotonin transporter (Mah & Tang, 1998).

The Bwiti cult in Gabon

The Ibogaine that is found in the root of an Africa plant in West Africa can be found in two forms: the Tabernanthe Iboga and the Tabernanthe Manii. Both types seem to have similar psychotropic qualities (Fernandez, 1982). Iboga has been used for ages by the local population as a part of the Bwiti cult, which is a Gabonese religion. The Bwiti cult uses the Iboga root as a inherent part of the initiation ritual. During the initiation, prayers and songs are usually focused on the plant itself and not on the gods and the spirits. Bwiti are the gods and the ancestors, a connection with who can be made by the means of the Iboga. Bwiti is seen as the common ancestor, which reveals himself in the visions as an intermediator between the living and the gods.

The origin of the Bwiti cult can be found in the Mitsogho people that came to Gabon in the 19-th century. The Mitsogho people met the coast population of Gabon, the Fang, and taught them the rituals of eating the Iboga (Goutarel, 1993). Iboga is used in two different ways in the Bwiti cult. If used in low dosages (four to twenty grams) the Iboga does not cause any hallucinogen effects, but stimulates and causes euphoria. In the other way, an extremely high dose (between 200 and 1000 gram) of the substance is taken once or twice in a lifetime during the initiation ritual. The cult takes measures to assure that the initiated person "does not reach

too far in the village of the dead" and comes back. Moreover, the initiated person is closely supervised by other initiated individuals (the Iboga parents) during the whole ceremony.

The phases of the ibogaine experience

The ibogaine experience has been described as being characterized by three distinct phases (Lotsof, 1995). The onset of the effect progresses gradually. In the first phase after taking ibogaine (0-1 hours) the visual and the physical perception of the body change. Some patients suffer from lowered coordination ability and feel the need to lie down. The second phase (1-7 hours) is often called "the waking dream state". The patients lie down and usually are overwhelmed by the effects of the experience: hallucinations, emotions, changes in perception of their own body, time and space. Patients feel heavy physically and experience difficulties when trying to move. The hallucinations include, among other things, the following scenes: hearing African drums; seeing TV screens, animals, deceased people (who often look alive and approach the person, tell him something and disappear again); flying above oceans, cities, woods; traveling through their own brain or DNA; seeing objects in intensive colors; scenes of violence etc. In spite of the strong hallucinogenic effects, the patients are able to exit them by opening the eyes. When the eyes are shut again, the hallucinations continue, as if they are shown on TV screens. The vast majority of the patients prefer not to communicate during this phase with the supervisors, but concentrate on the visions. Many patients also report about visions that can be characterized as complete stories, which mean something to the subject and help him to achieve certain insights. These visions are often memories or events from the early childhood. The insights reached are usually have to do with the subject's past and the meaning of life, the creation and evolution of the humanity, the animal world or the universe. The visions usually end after three to five hours.

The third phase is often called "the cognitive phase of deep introspection", which usually starts 8 – 36 hours after taking ibogaine. It seems that the body is asleep while the spirit is fully awake. This phase is characterized by an intellectual evaluation of earlier experiences in life and the choices made. For instance, if a certain choice seemed as the only solution at that point, the subject discovers in the third phase that there were other alternatives. After the end of the third phase the subjects finally fall asleep for several hours. Often the need to sleep is temporarily reduced after an ibogaine experience, a situation that can last for one month or even longer.

Research on ibogaine and addiction

Since the discovery of the anti-addictive potential of ibogaine by Howard Lotsof in the beginning of the Sixties, a significant amount of research on ibogaine has been conducted as a treatment for addiction. A large part of these studies points at the possibility that ibogaine is a powerful addiction interrupter. For example, Glick et al. (1992) found that ibogaine can interrupt or reduce self administration of morphine in rats. Moreover it was found that ibogaine does not act like an opiate substitute (such as methadone in heroin addiction) and does not cause any dependency or withdrawal symptoms (Woods et al., 1990). Similar results were found in the case of cocaine addiction. The cocaine-addicted rats' self administration behavior was inhibited by ibogaine (Cappendijk & Dzoljic, 1993). Several animal studies also found that multiple treatments with ibogaine seem to be more effective than just one (Glick, 1992; Cappendijk & Dzoljic, 1993).

In humans, ibogaine was found to suppress almost all the withdrawal symptoms of drug addicts (Lotsof, 1991; Kaplan, 1993; Mash, 1998). The remaining symptoms could be treated rather easily. Furthermore, Kaplan et al. (1993) report that the heroin seeking behavior of all heroin addicts in his "focus group" study was interrupted for relatively long periods. Furthermore, Mash et al. (2001) conducted a clinical research in which 12 opiate dependent patients were treated with ibogaine HCl as a part of their detoxification program. It was found that ibogaine provides a safe and effective treatment for withdrawal from heroin and methadone. An additional finding was that a single dose of ibogaine promoted a rapid detoxification from methadone without a gradual taper of the opiate. Moreover, the subjects were found to have a significantly lower craving for the drugs at 36 hours post treatment and at one month follow up assessment.

The clinical research on ibogaine still continues worldwide. For instance, a clinical trial using therapeutic doses is about to begin in Israel (Aliyah 2004) The trial will be led by Dr. Moshe Kotler, Director, Beer-Ya'akov Mental Health. The clinical trial protocol will involve 12 heroin patients. Exclusion criteria are histories of mental and organic disease. Inclusion criterion is a high motivation for treatment. The patients will be divided into 3 groups, each group receiving a different dose of ibogaine. The trial will be conducted in an hospital setting. Patients will be admitted 24 hours before the trail to the hospital and will be under comprehensive medical supervision. The protocol calls for follow-up examination of each patient at least one year after the treatment. The focus of the study is not on basic research

questions such as the mechanisms of interruption of addiction, but on the safety and effectiveness of ibogaine as a specific medication for addiction.

Research question

The short term effects of ibogaine are relatively known. It is interesting to examine these effects in the long term and try to determine the average longest drug free period as a result of the ibogaine treatment. The following research question is posed in this pilot:

1. *How does Ibogaine treatment affect the drug use pattern of drug addicts in the long term?*

The ibogaine experience is a highly invasive event in one's life. It is notable that a great number of individuals that took ibogaine report many changes during and after the treatment. These changes are far from being limited to hallucinogenic experiences in the first few hours of the treatment. Going through a process of detoxification accompanied by almost no withdrawal symptoms and at the same time experiencing and processing past life events is a mysterious and one of the most intriguing qualities of ibogaine. The short term personal changes that are being reported are not less impressive than the anti addictive outcome of such session. Therefore, the second research question is formulated as follows:

2. *Are the effects of the ibogaine treatment limited to altering the drug behavior of the addicts or are the medical, psychological, social and legal aspects in the addicts' lives affected by the ibogaine treatment as well?*

RESEARCH METHODS

Design

The research design was a prospective longitudinal study. At baseline data were gathered retrospectively, using self – report questionnaires filled in by individuals who were treated by ibogaine at least once for substance dependence. On the average of one year later, participants were contacted once again and sent a follow-up questionnaire. The aim was to determine whether there had been changes in the addiction and personal behavior of the participants in the course of the year.

Sampling

Because of the nature of the ibogaine treatment in the past, namely that the vast majority of the treatments takes place in an informal, non-clinical environment, that is being coordinated by non-professional 'therapy providers', formidable data collection problems were faced from the start of the study. In most cases that the therapy providers were willing to cooperate, but they did not keep systematic records that would support follow up studies of their clients. Those clients who were accessible via the therapy providers were usually treated for a very short time ago, which did not suit the purposes of this study.

In order to control for a biased sample of treated individuals, the people who were personally known by the researcher that went through the treatment were not selected. The collection of data had to occur in an independent way. Therefore, a method of recruitment for the study was by an advertisement posted on different ibogaine related web-sites. The advertisement is presented in Appendix 1. Full anonymity was guaranteed for each participant. Those people who responded by email to the advertisement were first sent an email with the questionnaire as an attachment. They were asked to fill it in and save as an attachment and send it back. The questionnaire also included a section where the participant was asked to give an email contact address for the follow-up assessment. This procedure was found to be burdensome to some persons as indicated by feedback from the websites. A more efficient system was then introduced where a link to the Vrije University website was added to the participating ibogaine websites. This allowed the interested participant to click a link on the advertisement and go directly to the questionnaire posted on line, fill it in and click a button to send it to me. A significant part of the technical aspects and the relations with the web-sites was done in consultation with Mr. Howard Lotsof .

Twenty one properly filled in questionnaires were received during the data collection period of 16 months (March 2003-July 2004). The response rate for the follow-up was 33%.

Instrument

The web-based questionnaires were largely adapted from the Europe-Addiction Severity Index. The questionnaire is located in Appendix 2. The questionnaire included four sections, each of which concentrated on a different aspect of the addiction of the participant. Section A contains information concerning personal data and drug history, such as asking when did the respondent start using different drugs. Section B deals with the history of ibogaine treatments. Section C contains information regarding the results of the treatment, such as drug use after ibogaine treatment. Section D concerns other changes as a result of the treatment, such as employment, medical condition, relationships and psychological state. The questionnaire was built mostly from closed-ended questions. However, when appropriate open-ended questions were used as well.

Data Analysis

The coded data of each participant were entered in an Excel file. Since this was an exploratory pilot study the statistical analysis was limited to descriptive statistics of central tendency (means and medians) and percentages. A univariate analysis was conducted on each question.

The various univariate analyses included: personal sociodemographic characteristics, drug use history, treatment history (with both ibogaine and other methods); treatment effect on drug use, on social well-being, on medical condition and on the relationship with the law. Regarding the duration of the drug free period of the participants, the longest period was measured. The reason is that a significant amount of participants repeated their treatment at least once, which complicates the analysis of the drug free period. Bivariate analyses were also conducted. The relationships among the number of drugs used, the number of ibogaine treatments and the drug free period was evaluated.

Further analysis defined three specific groups: a) participants that have quit using any substances (including those which they were *not* treated for); b) participants that have quit using the primary *and* the secondary drugs of abuse, but continued to use other substances; c) participants that have not quit using the primary *or* the secondary drug of abuse. As far as the use of drugs is concerned, the definition of a successful treatment in this study is that the participant belongs to either group a or b.
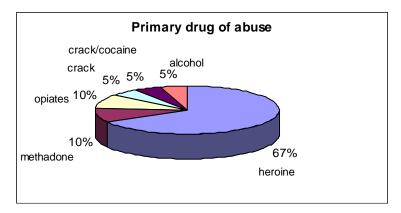
RESULTS

Personal socio-demographic characteristics

The average age of the participants of the study was 37.8 years. 71% of the participants were male, while the rest (29%) female. A majority of the participants were residents of the USA (55%), another group was originally from Western Europe (30%) and a smaller segment of the participants (15%) were East European.
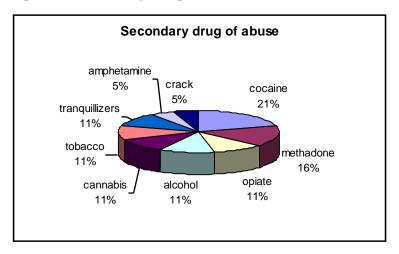
General drug use history

The average age of beginning any drug use was 14.9 years, while no difference between the age of onset for men and women was found. It was found that a large percentage of the participants used heroin as a primary drug of abuse (67%). An additional 10% used other opiates (such as Oxycontin and Codeine) as their primary drug. Another 10% used methadone, 5% used crack, 5% crack and cocaine in combination and 5% alcohol. It can be seen that a vast majority of the addicts – 87% - reported an opiate – based substance as their primary drug of abuse. For a representation of the results, see Figure 1.

Figure 1: Primary drug of abuse

As for the secondary drug of abuse, the results showed more variation. The two largest percentages participants mentioned cocaine and methadone (21% and 16% respectively) as their secondary drug. Smaller percentages (11% each) were using other opiates, alcohol, cannabis, tobacco and tranquillizers. Five percent reported crack as a secondary drug and another 5% - amphetamines (see Figure 2).
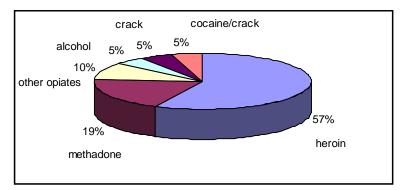
Figure 2: Secondary drug of abuse

Secondary drug of abuse

amphetamine 5%
crack 5%
cocaine 21%
tranquillizers 11%
methadone 16%
tobacco 11%
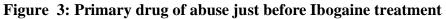cannabis 11%
alcohol 11%
opiate 11%

On the experience of other drug treatments for addiction in their life histories, all the participants (100%) reported that they have tried other treatments before trying ibogaine. It is interesting to mention that the average period of time before seeking the first other treatment was 12.7 years. The average period of staying clean after the other treatments was 9 months, while the median was 4.5 months.

The Ibogaine treatment

Participants reported a different drug use habits in general compared to the use just before the first treatment. Figure 3 shows that the use of heroin decreases from 67% (when the participants are asked to mention their primary drug of abuse in general) to 57% (primary drug of abuse just before the Ibogaine treatment). At the same time, the use of methadone increases from 10% to 19% just before the treatment with Ibogaine. In other words, we can see a tendency for a transition of use from heroin to methadone before trying the Ibogaine treatment. Except for this, no other changes in drug use pattern were found, regarding both the primary and the secondary drug. The vast majority of the participants used opiates as a primary drug and 90% of the participants reported about use of at least one secondary drug before ibogaine treatment. As mentioned before, the choice of the secondary drug is much more heterogeneous (see Figure 4).
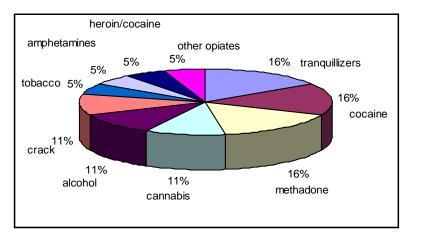
Figure 3: Primary drug of abuse just before Ibogaine treatment

Figure 4: Secondary drug of abuse just before Ibogaine treatment

The participants were asked about the period of drug use before the (first) Ibogaine treatment. The results show that the participants used the primary drug for 10 years (on average) before the Ibogaine treatment, and used the secondary drug for 14 years. The medians were 8 and 10.5 years respectively.

Additional information was gathered concerning the treatment modality. The results show that in two-thirds of the treatments (67%) the treatment took place in a non-clinical environment with the assistance of an Ibogaine therapist. Another group of participants administered the drug to themselves, by the means of self-treatment (29%). Only 5% of the participants (one person) were treated in a clinical environment with the assistance of an Ibogaine therapist. Moreover, a large part of the participants (85%) were treated with HCl, while the rest (15%) used the extract.

Another interesting point was the number of repeated treatments with Ibogaine. Forty-eight percent of the participants repeated their treatment once. The average gap between the first and the second treatment was 1.8 years. 14% of all the participants were treated three times in total, while the time period between the second and the third treatment was 1 year.

Influence on drug use

As was already mentioned above, the results of the Ibogaine treatment were analyzed at different levels. The results include multiple outcomes such as ultimate cessation of using any substances whatsoever, the drug free period, whether the person quit using the drug which he/she was treated for (primary/secondary drug of use) etc.

The results show that 24% (5 out of 21) of all the participants have quit using **any** substances whatsoever, including hard drugs, soft drugs, pain medications, tranquillizers and alcohol. The average drug free period of this group of people was 41.2 months - almost 3.5 years. The median was lower, however - 24 months. This group will be called *group 1*.

Moreover, from the remaining 76% (*group 2*), slightly more than half (56%) quit using their primary and secondary drugs of abuse, but still continued to use other substances (in most cases, alcohol or cannabis) – which will be referred to as *group 3*. The average drug free period (of the primary and the secondary drugs of abuse) of this group of people was 20,8 months – about one and a half year. The median was lower in this group as well – 4.5 months.

It is worth mentioning that however 33% of the 56% mentioned above, did quit their primary and secondary drugs, they started using other substances instead (usually, oxycontin and cannabis). In other words, 33% of the group that quit using the primary and the secondary drugs, but still used other drugs, started using other substances.

Forty-four percent of group 2 still used their primary and/or secondary drug of abuse. The median of this group's drug free period was 1 week. This group will be called *group 4*. However, when taking a deeper look at the data, we can see that 6 out of 7 participants of this group report that they consume lower quantities of the drugs.

In sum, out of the whole research sample, 67% of the participants quit using either all kinds of substances or their primary and secondary drugs. 33% of the sample did not quit using their primary or secondary drugs, but decreased the amount of drug used.

The overall mean-drug free period (from primary and secondary drugs) of all the participants was 21.8 months. The median was, however, lower - 6 months.

A substantial association was found between the duration of the drug free period and the type of Ibogaine used during the treatment. The results show that the participants that were treated with HCl had a substantially longer drug free period than the group treated with extract. The average drug free period of the group treated with HCl was 26.8 months, while of the group treated with the extract – 2.1 months.

Personal changes

Several aspects of the personal situation before and after the Ibogaine treatment were examined, such as employment, medical condition, psychological condition, relationships with others and with the law.

Surprisingly, a vast majority of the participants (86%) were employed before the treatment, and all the participants of the follow-up questionnaire (6 people) reported that they kept their jobs until these days. Furthermore, no distinct characteristics of the group's occupation and education were found, the group was very heterogeneous. The participants' positions varied from a university professor to unemployed drug dealers.

As far as medical condition is concerned, a significant part of the participants (43%) reported that their health was reasonable before the Ibogaine treatment, 24% reported bad health; 19% - good and 14% - very bad medical condition before treatment. 29% also reported developing a chronic disease during the addiction period.

After the Ibogaine treatment 58% of the participants report an *improvement* of their medical condition, 26% report of no change and 16% - claim that their health has worsened. Regarding the last group of the 16% (3 participants), some interesting facts should be mentioned – in two out of the three cases the treatment has failed and the patients continued their drug use; and all three underwent only one treatment. Furthermore, all three were male, in their fifties suffering from heroin addiction.

The participants of the study were also asked about their personal relationships before and after the Ibogaine treatment, such as friendships, intimate relationships, professional relationships etc. Eighty-eight percent reported a significant improvement in different aspects (one or more) of relationships with significant others. The remaining 12% claimed that no change has taken place in their relationships as a result of the treatment.

One of the participants, P12, writes :"I found that I could not tolerate the 12 year live-in partner situation I was in (I think the methadone etc. allowed me to tolerate it before) and we are separating. I have found that I have more interest and empathy for others than I had before: seek out friends more, feel more connected and caring towards students and co-workers. Also feel more empowered to make other changes I have wanted for a long time, such as job change, relocation etc." Another respondent (P07) shares: "I became a reliable, trustworthy person. My family invited me back into the fold. Before they didn't want me around. Didn't trust me with anything, now they offered me cash for Christmas...that would never happen before. They enjoy being around me and I enjoy being around others. I have become more focused, positive and energetic."

The data gathered concerning the psychological well-being of the participants indicated that a large percentage of the participants report of anxieties (67%) and depressions (61%) before being treated with Ibogaine. Almost all the participants claim that improvement has take place regarding these two disorders (92% and 100% respectively). The Table 1 presents the complete data.

Table 1: Percentage distribution of psychological symptoms before and after Ibogaine treatment (N=18)

	symptoms before treatment	improved or disappeared after treatment	no change	worsened after treatment	developed after treatment
Functional psychosis	6	100	0	0	0
Anxiety	67	92	0	8	0
Phobias	11	100	0	0	0
Depression	61	100	0	0	6
OCD	17	100	0	0	6
Hypochondria	11	100	0	0	6
Eating disorder	28	80	6	0	6
Social isolation	33	100	0	0	0
Borderline disorder	6	100	0	0	6

As we see in table 1, there has been a tremendous improvement in all kinds of psychological symptoms. It is worth mentioning that the high percentages of improvement in the psychological symptoms of the participants after the treatment are not highly correlated with the treatment's success as defined in chapter 5.4 (groups 1 and 3 – either quit using all substances or quit using their primary and secondary drug). In spite of the fact that the percentage of successful treatments in the whole sample was 67% in total, the percentage of the participants reporting psychological improvement is 96% (calculated as a weighted average of the improvement rates).

Another aspect of the effect of the Ibogaine treatment was measured by the relationship with the law of the participants. Thirty-five percent reported an improvement in this aspect, while 65% claimed that no changes occurred. To illustrate, respondent P07 is quoted: "Two days before the first Ibogaine treatment I was arrested for shooting up in public...and had been arrested on several different occasions for a variety of offences. Since the treatment I haven't been in any trouble with the law outside of two speeding tickets."

Table 2: Mean and median drug free period as a function of number of Ibogaine treatments (in months).

	mean	median
1 treatment	9.7	2.3
2 treatments	35.7	12.0
3 treatments	52.0	42.0

The correlation between the number of drugs used and the drug free period has been evaluated. Except a slight tendency to having a longer drug free period in the case of less than three drugs used before treatment, only relatively small differences were found. Table 3 shows that the action of Ibogaine seems to be independent from the number of drugs the participants has used.

Table 3: Number of average months drug free as a result of the number of drugs used.

Number of drugs	1-2 drugs	3-4 drugs	5 and more drugs
Number of months drug free	25.8	19.3	20.4

Another interesting variable was discovered during the analysis of the data. Although "Ibogaine treatment" is referred to in the title of this report, there are actually three distinct sub types: HCl, extract and the combination of these two. In spite of the fact that the number of participants that used the extract was rather small in the study, there still appears to be a significant gap between the drug free period after HCl treatment and extract treatment - 26,8 and 2,1 months respectively.

DISCUSSION

Drug use aspects

As was mentioned earlier, in this study an attempt was made to determine the long-term effects of an Ibogaine treatment on drug addicts. The short-term anti-addictive effects of Ibogaine have been published in the past by Lotsof (1986), Kaplan and colleagues (1993) and others. Ibogaine appears to be, among others, an effective addiction interrupter.

A central question in many addiction studies is the definition of a successful treatment. Especially in cases of long lasting multiple addictions (to two or more drugs) the measurement of course and outcome is much more complicated than the gross categories staying clean or relapsing. Many other aspects of the life of the addict should be explored as well in order to evaluate the effectiveness of any anti-addictive therapy. In this study I have tried to approach the addict both as a person who has a chemical dependency and as an individual who like everybody else experiences personal, financial, social and health problems etc. This conception is consistent wit the multidimensional view of addiction as reflected in the Addiction severity Index (Hendriks, 1989)

As to the first aspect which has been examined, namely drug use behavior after the Ibogaine treatment, the results presented confirm prior studies in this field, which found that Ibogaine is a successful addiction interrupter in the short term (Hendriks, Adriaanns & Blanken, 1993). In this study 19 participants out of the sample of 21 quit using their primary and secondary drugs for at least one week. The study also confirms the conclusion of the study of Hendriks, Adriaanns & Blanken (1993) concerning the subjects that had a relapse a short time after the treatment (about one week). Hendriks et al. found that the subjects that relapsed reduced significantly the dosage of the drugs used and frequency of administration. In this study was found that 6 out of 7 participants that relapsed after the treatment reported lower quantities of the drugs used.

As can be seen from the results, the anti-addictive effects of Ibogaine on the participants are quite encouraging:

- 24% of the participants were drug free from any kind of drugs at the time they filled in the questionnaire (*Group 1*).

- Another 43% of the participants were not using their primary and secondary drugs (which they were treated for), but were using other substances at the time of filling in the questionnaire (*Group 3*).

- The remaining 33% of the sample were using either primary or secondary drugs at the time of filling in the questionnaire (*Group 4*).

These results point out that 67% of the participants report a successful treatment outcome, meaning that they belong either to *group 1* or *3* mentioned above.

As to the longer term effects of Ibogaine on drug use, a different drug free period has been found in every group of the participants:

- Group 1 - The average drug free period of this group of people was 41.2 months - almost 3.5 years. The median was lower, however - 24 months.
- Group 3 - The average drug free period (of the primary and the secondary drugs of abuse) of this group of people was 20.8 months – about one and a half year. The median was lower in this group as well – 4.5 months.
- Group 4 - The median of this group's drug free period was 1 week. Because of the small sample, the average drug free period of this group (9.1 months) is misleading.

The overall average drug free period (from primary and secondary drugs) of the entire sample was 21.8 months. The median that was measured was 6 months. These results can be seen in a positive light, especially considering the same sample's experience with other addiction interrupting treatments (such as rehabilitation clinics, 12 steps programs, methadone detoxication, psychotherapy etc.). The average period of staying clean after the other treatments was 9 months, while the median was 4.5 months. If one will compare the cost-benefit ratio (time and the resources that have to be invested into a different kinds of conventional treatments to one or two Ibogaine sessions costs and the results achieved), it seems that the Ibogaine treatment (possibly in combination with other supportive treatments) is preferable.

The data presented shows that there is an additional important variable that has to do with the success or failure of the Ibogaine treatment. The number of additional Ibogaine treatments is positively correlated with the duration of the drug free period (see table 2).

The subjects in group 4 still used their primary and/or secondary drug of abuse. The median of this group's drug free period was 1 week. The results show that a large majority of the subjects consumed lower quantities of the drug after the ibogaine treatment. This finding is supported by prior studies of the physio-pharmacological modus operandi of Ibogaine, namely its ability to modify the sensitivity of the central nervous system to opiates (Parker & Siegel, 2001). As a result of this ability the quantity of the drug needed becomes less, which is a direct consequence of the anti-addictive quality of Ibogaine.

Medical, psychological, social and legal aspects

As was already mentioned, the participants reported major changes in their quality of life, especially in the following aspects: medical condition (58% reported a health improvement since the treatment), social functioning (88% claimed that they experienced a significant improvement), psychological well-being (significant improvement especially in anxiety and depression) and relationship with the law (one third of the participants reduced or ceased their criminal behavior).

It is unclear whether the changes mentioned above are a result of the Ibogaine treatment itself or a result of quitting the drug use (having a successful Ibogaine treatment). It is obvious that individuals that do not use drugs face fewer difficulties in the various life aspects. However, from this research it can be seen that also the participants whose treatment has failed did benefit from the treatment in other life aspects. One possible explanation of this phenomenon could be that in spite of the fact that success was defined as not using at least primary and secondary drugs, this definition is problematic. We have seen that the 85% of the participants that were still using drugs (primary or secondary) reported of lower quantity of use of the drug. Their treatment was defined as a failure, though.

An alternative explanation to this phenomenon could be that in the period between the Ibogaine treatment and the relapse (when the subject was still drug free), certain aspects of his/her life were improved, such as medical care, better environment etc. Such changes could lead to the improvements mentioned above.

A third possible explanation, is that since Ibogaine works on different levels (physical, mental and spiritual). According to Bastiaans (personal communication, 1991), it offers the addict various solutions beyond the interruption of the physical addiction. because of the mechanism of Abreaction. This mechanism can be described as a "flashback" of a traumatic experience, such as war or rape. The memory is so intense, stressful and real, that it feels like the event is happening again (Steele, 1989). The reports concerning the contents of an ibogaine therapy described earlier show indeed that ibogaine causes the patients to watch their own life events, part of which might be traumatic. It is possible that the re-experiencing of traumatic events is therapeutic for drug addicts.

Limitations

In order to be able to interpret the results in an appropriate way, several limitations of the study are mentioned.

The first possible limitation that should be considered is the design of the study, namely the use of questionnaires filled in by the participants (self report). This methodology, however efficient in many aspects, has the disadvantage that certain questions might be misinterpreted by the participants. Furthermore, this methodology can result in participants not revealing all the information (not filling in certain parts of the questionnaire). Moreover, because of the nature of the study group, one can expect that there is a chance that certain participants have answered inadequately due to substance use at that time.

In addition, the fact that the questionnaires were gathered by using the internet opens the possibility of receiving less reliable information than by other information gathering techniques. Since the information cannot be verified by collateral data it is important to be aware of the possibility that some responses are not true.

Another point that should be mentioned is the relatively small sample size. As mentioned earlier, there were many difficulties in accessing the sample - due to the nature of the study and the semi-legal status of Ibogaine. The small sample complicates the attempts to generalize the findings on a larger population of drug addicts.

Regarding the analysis of the data, it is important to take into consideration that the respondents filled in the questionnaires in different periods after the Ibogaine treatment. Due to the small sample available it was impossible to select a group of participants that filled in the questionnaire at the same period of time after being treated by Ibogaine.

Conclusion: Encouraging, but much more research to be done

Two research questions of this study were formulated. As to the first research question the findings show that Ibogaine does influence various aspects of the life of the drug addict, namely medical condition, social functioning, psychological well-being and relationship with the law. Certain aspects were improved more than others.

As to the second research question regarding the long term effects of the Ibogaine treatment on the drug use pattern, it was found that 67% of the participants quit using either all kinds of substances or their primary and secondary drugs. Thirty-three percent of the sample did not quit using their primary or secondary drugs, but decreased the amount of drug used.
The overall average drug free period (from primary and secondary drugs) of all the participants was 21.8 months. The median was, however, lower - 6 months.

The results of this study are encouraging as we see that Ibogaine treatment results in a significant drug free periods among two-thirds of the drug addicts. This study is an appropriate starting point for further research on the long term effects of the Ibogaine treatment, using larger samples of drug addicts.

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