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Herbal Therapeutic for Hungiton's Disease: Experimental Studies

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ABSTRACT
Huntington's disease (HD) is typically inherited from a parent who has a huntingtin gene (HTT) mutation. However, up to 10% of instances may be brought on by new mutations. The huntingtin gene provides the genetic coding for the huntingtin protein (Htt). There is presently no known cure for HD, which requires full-time nursing care in its advanced phases. There are therapies that can help control the chorea, despite the fact that there is no medication that can totally halt the disease's progression. Many plants have been shown to be successful in treating symptoms similar to HD. Taking these factors into account, a review was carried out to investigate the herbal remedies investigated in experimental models utilising different databases. Studies show that herbal medicines have therapeutic potential.Hungiton's disease effects can be reversed with Garcinia Kola, Withaniasomniferaand Convolvulus pluricaulis. Even yet, there are numerous herbs that have been shown to be effective in treating Hungiton's disease. However, very few of them have been studied in experimental trials. Therefore, there is an increasing need to investigate these natural remedies using more experimental methods.

Keywords: Plants, Herbs, treatment, invivo, Hungiton's disease

I. INTRODUCTION

A neurological condition, Huntington's disease (HD), often known as Huntington's chorea is primarily inherited. The early indications are frequently oblique issues with mood or cognitive function [1] A general loss of coordination and a shaky walk frequently come next [2]. It is a basal ganglia dysfunction that also causes chorea, a hyperkinetic movement disorder [3][4]. The chorea's clumsy, uncontrollable motions become more noticeable as the illness worsens.[1] Physical capacities steadily deteriorate until speech is lost and coordinated movement is challenging.[1][2] Dementia typically results in mental impairment [5]. Each person experiences different specific symptoms [1] While symptoms might appear at any age, they typically first appear between the ages of 30 and 50[5][6] Each new generation may experience the disease at an earlier stage.[1] Juvenile HD, which accounts for about 8% of cases that begin before the age of 20, often manifests as sluggish movement symptoms of Parkinson's disease rather than chorea [5].

Usually, HD is passed down from an affected parent who has a huntingtin gene (HTT) mutation [6]. However, new mutations may be the cause of up to 10% of cases[1]. The genetic code for the huntingtin protein (Htt) is provided by the huntingtin gene [1]. An aberrant mutant protein (mHtt) is produced when the CAG repeats of cytosine-adenine-guanine (also known as a trinucleotide repeat expansion) in the gene that codes for the huntingtin protein expand. This protein eventually destroys brain cells through a variety of potential pathways [3][7].

The final stages of HD necessitate full-time care, and there is currently no recognised cure.[2] Treatments can reduce some symptoms and enhance quality of life in some people [5]. Tetrabenazine has the best track record for treating mobility issues [3]. About 4 to 15 persons of European descent experience HD [1][5]. While its prevalence in Africa is unclear, it is uncommon among Japanese people [5]. Men and women are equally affected by the illness [5]. Life expectancy is shortened by complications like pneumonia, heart disease, and bodily harm from falls [5]. In roughly 9% of deaths, suicide is the cause [5]. Death usually happens 15 to 20 years after the disease was initially discovered [6].

Despite the fact that there is no medication that can completely halt the disease's progression, there are therapies that can assist control the chorea. Many plants have been demonstrated to be effective in treating HD-like symptoms [8].Taking,

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these facts in consideration a review was conducted to study the herbal treatment tested in experimental models. So, that these treatments would also be enlightenment.

II. METHODOLOGY

A number of widely used databases, including SciFinder, Google Scholar, MEDLINE, EMBASE, Scopus, PubMed, and Science Direct, were utilised to retrieve published papers (up until April 2023). We looked for and extracted published literature relating to herbal treatment against Hungiton's using the keywords "herb", "plant", "treatment", "invivo", "therapeutic", and "Hungiton's disease". The language of searches was limited to English.

III. RESULT

With aniasomnifera

This research created a straightforward and efficient rat model of HD that more closely resembles the human model of HD. Additionally, the function of a herbal plant extract from Withaniasomnifera and its active ingredient, Withanolide A, in preventing HD rat model nerve damage was examined. Rotarod equipment was used to examine the herbal drug's action. In the rotarod, both the drug group animals and the lesion control animals exhibited normal behaviour, demonstrating the drug's effectiveness[9].

In this study, the animals were pretreated with the medications created and underwent lesion surgery to develop HD that is comparable to human HD. During pretreatment, the animals were also trained in rotarod. Animals underwent a rotarod test to assess their motor coordination five days following surgery. The animals in the LC group did poorly on these measures and frequently slipped into the foot plate. The WS125 and WD100 animal groups successfully completed the 180-minute job of balancing on the rotarod. This is because even after the lesion surgery, the animals maintained their coordination and balance on the rotarod because both medications were successful in protecting the striatum. The main goals of modern therapy are to cure the symptoms of HD and slow its progression. HD's whole curation falls short of expectations. However, by regularly using these herbal medications, we can avoid [9].

Convolvulus pluricaulis

A study to determine if the standardised hydro-methanol extract of C. pluricaulis (CPE) and its fractions, ethyl acetate (EAE), butanol (BE), and aqueous (AE), protected rats from the neurotoxicity caused by 3-nitropropionic acid (3-NP). Through the use of thin layer chromatography and densitometric measurement, the extract of the entire plant was standardised based on its scopoletin concentration (0.014%). For 20 days, oral doses of CPE (100 and 200 mg/kg) and its fractions, EAE (15 and 30 mg/kg), BE (25 and 50 mg/kg), and AE (50 and 100 mg/kg), were given. They were evaluated for their ability to protect against 3-NP (10 mg/kg, i.p. for 14 days) based on how they affected body weight, locomotor activity, grip strength, gait pattern, and cognitive impairment [10].

The striatum and cortex regions of the brain were examined for biochemical indicators of oxidative damage. Reduced body weight, locomotor activity, memory, grip strength, and oxidative defence were indicators of HD-like symptoms brought on by 3-NP administration. In compared to 3-NP-treated mice on days 10 and 15, CPE (200 mg/kg), EAE (30 mg/kg), and BE (50 mg/kg) significantly (p 0.001) reduced locomotor activity, grip strength, memory, body weight, and oxidative defence. According to the results of the current investigation, CPE may have a protective effect against 3-NP-induced neurotoxicity and should be further researched for its potential to treat Huntington's disease [10].

Garcinia kola

On malnourished mice that had received a neurotoxic, research has been done to evaluate the neuroprotective properties of aqueous Garcinia kola extract using a histological method. 32 adult malnourished mice were used in the investigation, and they were randomly divided into four groups (n=8): A, B, C, and D. The other groups acted as the experimental groups, with Group A acting as the control. Animals in group A were continuously fed a malnourished diet and given copious amounts of water. Animals in group B received only 20 mg/kg of the neurotoxin 3-Nitropropionic acid (3-NP), group C received only garcinia kola extracts, and group D received a seven-day pre-treatment of 200 mg/kg of garcinia kola extracts before receiving the neurotoxin at 20 mg/kg body weight [11].

The relevant groups' brains were administered neurotoxins for three days before being removed and fixed in formal calcium for histological processing.According to the study, animals in group B showed signs of blood vessel blockage and cellular degradation in their hippocampus and cerebellar neurons, which were not seen in groups A, C, or D. Group B had the least amount of cresyl violet staining compared to groups A, C, and D. Even though all of the animals in group D received the same amount of 3-

Nitropropionic acid, there were no signs of brain degeneration like there were in group B. According to the study's findings, Garcinia kola protects the neurons in starved mice's hippocampus and cerebellum[11].

IV. CONCLUSION

Studies conclude the potential of herbal remedies in treatment of Hungiton's disease. Herbs such as Withaniasomnifera Convolvulus pluricaulis Garcinia kolashows effect in reversing the effects of Hungiton'sdisease. Although, there are many herbs present which can show therapeutic efficacy in treatment of Hungiton'sdisease. But only few of them are explored in animal studies.So, there is a growing need to study these herbal treatment in more experimental models.

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