

# [Treatment of down syndrome using haloperidol](https://assignbuster.com/treatment-of-down-syndrome-using-haloperidol/)

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| CLINICAL RESEARCH FACILITY APPLICATION |

Q1 Details of Main Contact:

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| Title & Name: | “ Haloperidol in Down Syndrome” and Sivaram Kumar Sivalingam Pandiyarajan |

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| Q2 Study title | Treatment of Down Syndrome using Haloperidol |

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| Q3 Please provide an abstract or brief synopsis of the proposed study (Max 250 words). | |
| Haloperidol is an antipsychotic drug which exhibits high affinity towards dopamine D2 receptor antagonism. It also shows a slow receptor dissociation kinetics which is similar to phenothiazines. The drug is used in the treatment of schizophrenia were polymorphisms in the dopamine receptor genes showed the presence of psychotic phenomena or aggressive behavior. Down syndrome (DS) increases the risk of Alzheimer’s disease (AD) by 15% for the people who live 40 years are long. Problems related to behavior are not a general issue as in other syndromes associated with intellectual disability. 30% of children with DS have a mental illness. Anxiety and depression in early adulthood may develop for the people with DS. Studies indicate that polymorphisms in dopamine receptor D 1 (DRD1) and dopamine receptor D 3 (DRD3) genes in late-onset AD exhibit symptoms of psychotic phenomena or aggressive behavior in people. Haloperidol suppresses the ionic imbalance by blocking the beta-amyloid-induced elevation of calcium in Alzheimer cells which showed a significant decrease in calcium cells. Studies also indicate that the symptoms of attention-deficit hyperactivity disorder (ADHD) in DS also showed the effects of executive function in children with DS about the dopamine receptor DRD4 gene linked to ADHD in people with DS. Hence, it is hypothesized that haloperidol can be used in the treatment of Down syndrome. | |
| Indicate your Word Count (Max 250 words). | 215 |

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| Q4 Please outline what question(s) the study is designed to answer/primary measure of outcome (Max 150 words). | |
| The primary outcome of the study is to reduce the relapse of patients into psychosis due to down syndrome (DS). Reduction of relapse in DS due to psychotic breakdown which occurs similarly as in schizophrenia which indicates the activity of haloperidol in the prevention of diseases prognosis. During the study, details for questions such as the “ how the effect of haloperidol action on dopamine receptors reduce disease prognosis of DS,” “ What is the mechanism of action of haloperidol in the treatment of DS?”, “ Does haloperidol prevents the prognosis of DS by intervening the mechanism involved in Alzheimer’s disease (AD) or Attention-deficit hyperactivity disorder (ADHD)?”, Etc. | |
| Indicate your Word Count (Max 150 words). | 105 |

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| Q5 Indicate clearly how you will perform the study (include methods, materials, number of patients, demographics, statistics and all other matter that you consider important) (Max 1500 words). | |
| Haloperidol is an ethically approved drug which is already on the market and used for the treatment of schizophrenia, acute psychosis, Tourette syndrome, bipolar disorder, etc. Since haloperidol is ethically approved direct administration of the drug to the patients who have down syndrome (DS) can be performed, and observation study can be conducted. Human materials such as primary cell culture and organotrophic culture from a patient are required for the detailed understanding of the mechanism of action involved in the treatment of DS using Haloperidol. The mechanism of action should be compared with the Alzheimer’s disease (AD) and Attention-deficit hyperactivity disorder (ADHD) to analyze the effect on DS. Researchers have estimated that out of 1200 people one will suffer from DS in the United States this includes children, teens, and adults. Children with DS usually do not have mental retardation and a psychiatric disorder. 18% to 38% of children with DS currently have a possibility for the prevalence of the neurobehavioral and psychiatric disorder. During one of the research studies conducted regarding DS, determined that a pre-pubertal onset be found for children with DS presenting in the post-pubertal period which is the unique vulnerability period for specific psychiatric disorders.  The Study Design is performed by randomized allocation where a parallel interventional model of drug assignment is proposed. The subject, investigator and outcome assessor are masked from the drug and placebo treatment using a double-blind method to achieve high efficiency and less interference. The primary purpose remained to be the treatment of the disease. The inclusion and exclusion criteria for the participants for involving the study was neglected of age (18 to 64 years) and sex (Male, Female, and others) as a criterion. In the inclusion criteria, the patient should be primarily diagnosed with DS and should be hospitalized with Standard Trisomy 21, Translocation, and Mosaicism DS. The patient should have been diagnosed with the illness for at least one year and should have gone psychological evaluations. At the most, the patient should be able to drop off of any antipsychotic medication for a period.  There are two phases in the study of Haloperidol on DS. The DS outpatients who meet criteria for inclusion and exclusion is allowed to enter the Phase 1. A flexible dose of Haloperidol 1-5mg is given to the patients for 20 weeks of open acute treatment phase 1. An oral dose of 1 mg of Haloperidol is given daily, where the dose is titrated until the optimal dose is reached with an increase of 1 mg per titration. The optimal dose is fixed based on the optimal trade-off between side effects and efficacy. Phase 1 looks for patients who meet the criteria for clinical response and another exit the protocol and are treated with alternative medications openly. The patients who responded well in phase 1 are taken into Phase 2, where the random assignment of placebo-controlled continuation trial takes place for 24 weeks. Based on the severity and presence of psychosis the randomization is stratified where half of the patients takes haloperidol, and other patients receive a placebo. The Patients who relapse with psychosis during Phase B will exit the protocol and receive extensive treatment.  To attain the statistical significance and to achieve a normal distribution the alpha value is set as 0. 1 and small minimum sample size of 99 participants is required to pilot this study. Repeated measures ANOVA is to be conducted at three major time-points in the week 10, week 20 and baseline. This analytic strategy is to be used to measures the efficacy as well as side effects, global cognition, and activities of daily living. | |
| Indicate your Word Count (Max 1500 words). | 603 |

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| Q6 Indicate clearly the need to work with human materials for this research in terms of ethical approvals (Max 200 words). | |
| Haloperidol is an ethically approved drug which is already on the market and used for the treatment of schizophrenia, acute psychosis, Tourette syndrome, bipolar disorder, etc. Researchers have estimated that out of 1200 people one will suffer from Down syndrome in the United States this includes children, teens, and adults. Hence, the need of drug for the treatment of down syndrome (DS) is raising. Since haloperidol is ethically approved direct administration of the drug to the patients who have DS can be performed, and observation study can be conducted. The study requires less attention of rules and guidelines for ethical issues. Since there is no proper animal model for DS and obtaining, culturing, and preservation of primary cell culture and organotrophic culture from patients with DS is tough. Hence the need for human clinical trials is necessary for testing the drug “ haloperidol” for the treatment of DS. | |
| Indicate your Word Count (Max 200 words). | 147 |