Cigarette smoking and dependence are associated with psychiatric disorders, notably depression, which affects nearly 10% of the U.S. population. The chemicals present in cigarette smoke have been shown to induce the expression of cytochrome P-450 (CYP) enzymes, and as such, the metabolic effects of smoking warrant consideration in the context of pharmacotherapy. Specifically, in smokers compared to non-smokers, studies have shown lower serum levels of fluvoxamine, decreased fluvoxamine serum levels, increased expression of cytochrome P-450 (CYP) enzymes, and increased histone acetylation. This research emphasizes the need for clinicians to diligently monitor fluvoxamine treated patients who are smokers.

The mean CYP2D6 mRNA levels will be compared between groups using a two-sided t-test. A χ² test will be used to compare histone acetylation status between smokers and non-smokers. A two-sided p-value ≤ 0.05 will be considered statistically significant for all clinical endpoints.

Subjects who smoke will have a reduction in steady state fluvoxamine serum levels compared to non-smokers. Decreased fluvoxamine serum levels will be correlated with increased CYP2D6 mRNA with smokers exhibiting a significantly higher mean expression. Histone acetylation will be significantly increased in smokers compared to non-smokers. This research emphasizes the need for clinicians to diligently monitor fluvoxamine treated patients who are smokers.

Histone acetylation of CYP2D6 was not specifically assessed. Fluvoxamine metabolism by CYP2D6 could be capacity-limited in some subjects. CYP2D6 polymorphisms will not be analyzed.

Determine if histone acetylation alterations of CYP2D6 are influenced by smoking duration. Investigate the histone acetylation status of CYP2D6. Examine the ability of cigarette smoke to mediate CYP2D6 genotypic variation and the impact on fluvoxamine serum levels. Examine the influence of cigarette smoke on histone acetylation and deacetylation activity.