

REVIEW ARTICLE

Herbal Supplement of *Phaseolus vulgaris* L. Beans in Metabolic Abnormalities Induced by Atypical Antipsychotics: A Review

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Received 03 May 2013; Revised 05 Aug 2013; Accepted 14 Aug 2013

ABSTRACT

Metabolic instabilities are major adverse side effects in the treatment of schizophrenia patients with atypical antipsychotics (AAP). A substantial proportion of patients discontinue treatment with second-generation antipsychotics due to weight gain and metabolic abnormalities irrespective of AAP's efficacy. Possible add-on strategies are available ephedrine, nizatidine, naltrexone, metformin, amantadine, sibutramine, orlistat, topiramate and reboxetine but being active pharmaceuticals can contribute further in metabolic abnormalities. Herbal supplement can play safe in this kind of complications. Consumption of *Phaseolus vulgaris* bean proved beneficial in the prevention and treatment of chronic diseases. *Phaseolus vulgaris* beans treated significantly weight loss as well as an improved plasma lipid profile. Hence, *Phaseolus vulgaris* beans may be useful in the treatment of AAP induced metabolic abnormalities.

Key Words: Antipsychotic, *Phaseolus vulgaris*, weight loss.

INTRODUCTION

Atypical antipsychotic (AAP) medications that have revolutionized the treatment of mental illness have become stigmatized by metabolic side effects, including obesity and diabetes. Novel 'atypical' antipsychotic drugs represent a substantial improvement on older 'typical' drugs. The increased mortality rate for persons with schizophrenia is largely due to obesity-related diseases. The atypical antipsychotics offer an improved therapeutic index when compared with the conventional agents, but may impart serious adverse effects such as weight gain, metabolic abnormalities including insulin resistance, diabetes, cardiovascular side effects and hyperlipidemia. Extensive data from the literature indicate that autonomic nervous system dysfunction--intrinsic to schizophrenia and strongly exacerbated by antipsychotic treatment--is the cause of the pervasive metabolic and vascular dysfunctions associated with schizophrenia^[1,2,3].

Clozapine and olanzapine produce the greatest bodyweight gain, ziprasidone and aripiprazole have a neutral influence, and quetiapine and

risperidone cause an intermediate effect. Possible underlying causes of weight gain in patients treated with antipsychotic drugs is unknown, can be changes in the neurotransmitter, cytokine and hormone systems. Possible add-on strategies - based on case reports and small studies - are ephedrine, nizatidine, naltrexone, metformin, amantadine, sibutramine, orlistat, topiramate, and reboxetine but being active pharmaceutical come with negative or unwanted action too.

Antipsychotics and weight gain:

Atypical antipsychotic (AAP) medications that have revolutionized the treatment of mental illness have become branded by metabolic side effects, including obesity and diabetes. It remains controversial whether the defects are treatment induced or disease related. Although the mechanisms underlying these metabolic defects are not understood, it is assumed that the initiating pathophysiology is weight gain, secondary to centrally mediated increases in appetite.

The effect of antipsychotic medications on H1 and 5HT2 receptors has been associated with weight gain, but there is also a substantial amount of

evidence showing that D2 receptor blockade may be responsible for weight gain by interacting with the dopamine-opioid system.

Phaseolus vulgaris:

Phaseolus vulgaris, the common bean is herbaceous annual plant grown worldwide for its edible fruit, either the dry seed or the unripe fruit, both of which are referred to as beans. The leaf is also occasionally used as a vegetable, and the straw can be used for fodder. Along with other species of the bean genus (*Phaseolus*), it is

classified botanically into the *legume* family (Fabaceae), most of whose members acquire nitrogen through an association with rhizobia, a species of nitrogen-fixing bacteria [4].

Table No. 1 Bean Type

Province	Bean Type
Alberta	Pinto, great northern, small red, black, pink
Saskatchewan	Pinto, black, small red
Manitoba	White pea, pinto, black, dark red kidney, great northern, cranberry
Ontario	White pea, cranberry, black, dark red kidney, light red kidney
Quebec	Cranberry, navy, dark red kidney

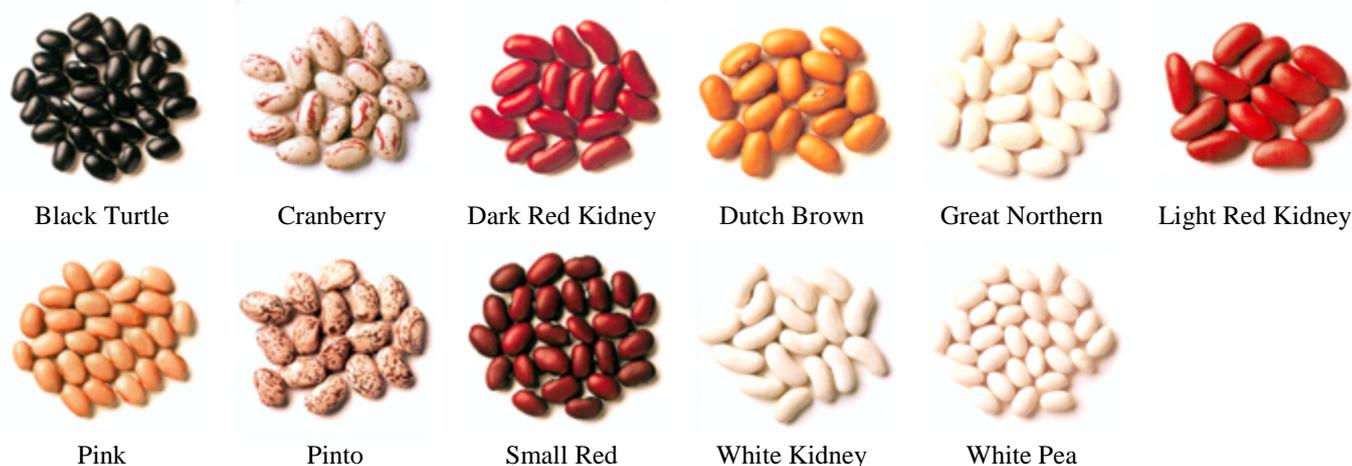


Figure 1: Bean Types

Consumption of the *Phaseolus vulgaris* species of beans may be beneficial in the prevention and treatment of chronic diseases that are promoted by increased glycaemic stress (hyperglycaemia and hyperinsulinaemia). These conditions include diabetes and CVD, as well as cancer [1].

Sprague-Dawley rats and a diet-induced obesity model in C57Bl/6 mice were used to assess the effect of cooked dry beans incorporated into a purified diet formulation on plasma lipids and hepatic proteins involved in the regulation of lipid biosynthesis. In both animal species, short-term feeding of a bean-containing diet reduced plasma total cholesterol and LDL-cholesterol without affecting HDL-cholesterol or total TAG. Mechanisms associated with cholesterol catabolism and excretion is the likely targets of the bean effect. Unexpectedly, bean-fed obese mice experienced weight loss as well as an improved plasma lipid profile within a 12 day time frame [5].

According to Helmstädter A. Bean pods (*Phaseolus vulgaris*) are among the most widely used traditional remedies against diabetes mellitus. Further he have cleared that, because of

their fiber content and an alpha-amylase inhibitory effect, beans might be more useful as food components in preventing or ameliorating type 2 diabetes [6]. In another study, *Phaseolus vulgaris* L. affirms its hypoglycaemic and antidiabetic potential; it may be used in complementary medicine to treat diabetes population [7].

In a research study, examination of dietary supplement containing 445 mg of *Phaseolus vulgaris* extract derived from the white kidney bean, on body composition of overweight human subjects, determine that after 30 days, subjects receiving *Phaseolus vulgaris* extract with a carbohydrate-rich, 2000- to 2200-calorie diet had significantly (p<0.001) greater reduction of body weight, BMI, fat mass, adipose tissue thickness, and waist/hip/ thigh circumferences while maintaining lean body mass compared to subjects receiving placebo. *Phaseolus vulgaris* extract produces significant decrements in body weight and suggest decrements in fat mass in the face of maintained lean body mass. *Phaseolus vulgaris* extract appears to be a safe and effective aid to consider in weight loss/maintenance programs [10].

CONCLUSION

Based on all above literature review, *Phaseolus vulgaris* looks like a perfect herbal supplement to take care of metabolic abnormalities induced by atypical antipsychotics in Schizophrenic patient. Further research is required to be conducted in animals and humans to know the effect of *Phaseolus vulgaris* supplement.

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