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Preventive use of Bach flower Rescue Remedy in the control of risk factors for cardiovascular disease in rats

KEYWORDS
Wistar rats;
Bach flowers;
Preventive medicine;
Animal experimentation;
Complementary therapies

Summary
Objectives: To evaluate the effect of Bach flower Rescue Remedy on the control of risk factors for cardiovascular disease in rats.
Design: A randomized longitudinal experimental study.
Methods: Eighteen Wistar rats were randomly divided into three groups of six animals each and orogastrically dosed with either 200 μl of water (group A, control), or 100 μl of water and 100 μl of Bach flower remedy (group B), or 200 μl of Bach flower remedy (group C) every 2 days, for 20 days. All animals were fed standard rat chow and water *ad libitum*.
Main outcome measures: Urine volume, body weight, feces weight, and food intake were measured every 2 days. On day 20, tests of glycemia, hyperuricemia, triglycerides, high-density lipoprotein (HDL) cholesterol, and total cholesterol were performed, and the anatomy and histopathology of the heart, liver and kidneys were evaluated. Data were analyzed using Tukey's test at a significance level of 5%.
Results: No significant differences were found in food intake, feces weight, urine volume and uric acid levels between groups. Group C had a significantly lower body weight gain than group A and lower glycemia compared with groups A and B. Groups B and C had significantly higher HDL-cholesterol and lower triglycerides than controls. Animals had mild hepatic steatosis, but no cardiac or renal damage was observed in the three groups.
Conclusion: Bach flower Rescue Remedy was effective in controlling glycemia, triglycerides, and HDL-cholesterol and may serve as a strategy for reducing risk factors for cardiovascular disease in rats. This study provides some preliminary ''proof of concept'' data that Bach Rescue Remedy may exert some biological effects.

Introduction

Estimates show that 80% of the world population use alternative medicine and that 85% of them use plants or plant-based preparations.[1] Bach flower remedies are based on the essences of 38 wild flowers. According to the philosophical theory of Dr. Edward Bach, the creator of the Bach flower therapy, these essences are able to restore harmony and balance to changes in mood and personality, which eventually lead to physical illness.[2,3] Previous studies have proposed that Bach flower remedies act through vibration, interacting subtly with biochemical and molecular reactions.[3—5] This theory explains the transfer of energy from one body to another through vibrations at similar frequencies.[2—4] The Bach flower therapy acts in the limbic system or directly in the hypothalamus, balancing the bioenergy and stress levels, and bringing harmony.[4]

Bach flower remedies are part of the alternative medicine in which therapies are based on a holistic perspective of the human being. Based on this holistic approach, several studies in animals and humans have suggested the use of Bach flowers as a complementary therapy.[5—10] Bach flower therapy was recognized by the World Health Organization in 1974,[11] and introduced in Brazil in 1980.[3] The practice of complementary medicine was implemented in the Brazilian Unified Health System, according to the Regulation No. 971 of May 15, 2102 by the Ministry of Health, focusing on quality improvement in health care through

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preventive and therapeutic actions more accessible to the general population.[1]

Some studies have found that Bach flower therapy reduce anxiety.[3,10] Rescue Remedy is one of the formulations of the Bach system of flower remedies for the treatment of anxiety.[10,12] A combination of flower remedies have a synergistic effect, and therefore one may opt to use single remedies or a selection of remedies may be combined into one treatment composite.[13] Because anxiety may interfere in the body physiology,[14] it was hypothesized that anxiety may affect risk factors for cardiovascular diseases.

Cardiovascular diseases have been ascribed to several etiopathological factors and atherosclerosis has been identified as the main cause of coronary heart and cerebrovascular diseases.[15] Ischemic heart disease is the leading cause of death in the world.[16]

The lack of studies on the use of Bach flower remedies for preventing physical illness and the recent implementation of complementary therapies in Brazilian public health institutions have motivated this study. Thus, the aim of our study was to evaluate the effects of Bach flower Rescue Remedy on the control of risk factors for cardiovascular disease in rats.

Material and methods

The study was approved by the Research Ethics Committee of the Universidade do Vale do Sapucaí (UNIVÁS), Brazil (approval no. 139/11). All animals received humane care in strict compliance with the Guide for the Care and Use of Laboratory Animals.[17]

A sample consisting of 18 healthy 3-month-old male Wistar rats (*Rattus Norvegicus albinus, Rodentia mammalia*), weighing 188—225 g was used in the study. The animals were housed in individual metabolic cages on a 12:12 h light—dark cycle and provided with 60 g of standard rat chow every 2 days, based on the recommendations of the American Institute of Nutrition (AIN-93 purified diets for laboratory rodents),[18] and water *ad libitum*.

The rats were randomly divided into 3 groups of 6 animals each and dosed by orogastric gavage with either 200 μl of water (group A, control), or 100 μl of water and 100 μl of Bach Rescue Remedy (group B), or 200 μl of Bach Rescue Remedy (group C) every 2 days, for 20 days.

Bach Rescue Remedy (BioFlorais Comércio de Florais Ltda., Atibaia, SP, Brazil) is a combination of five flower remedies made with the essences of impatiens (*Impatiens glandulifera*), star of Bethlehem (*Ornithogalum umbellatum*), cherry plum (*Prunus cerasifera*), rock rose (*Helianthemum nummularium*), and clematis (*Clematis vitalba*).

Body weight, food intake, feces weight and urine volume were measured every 2 days. On day 20, the animals were anesthetized with ketamine hydrochloride (10 g/100 ml; Syntec, Cotia, Brazil) at a dose of 1 mg/100 g body weight and xylazine hydrochloride (2 g/100 ml; União Química, Pouso Alegre, Brazil) at a dose of 2 mg/100 g body weight.

Blood was obtained by intracardiac puncture and tests of glycemia, hyperuricemia, triglycerides, high-density lipoprotein (HDL) cholesterol, and total cholesterol were carried out. Next, hepatectomy, nephrectomy, and cardiectomy were performed to allow anatomical and histopathological examinations. The internal organs were weighted, immersion-fixed in 10% formalin, and histologically processed. The specimens were cut into 3-μm sections, mounted onto slides, stained with hematoxylin and eosin, and examined by light microscopy at a magnification of 1000×.

Statistical analysis was performed with Tukey's test,[19] a means of comparison analysis. For statistical analysis with repeated-measures ANOVA was used with a *post hoc* Tukey test ($P < 0.05$).[20] This test is widely used in animal model studies at a significance level of 5% and a 95% confidence interval.[21,22]

Table 1 Mean measurements taken after 20 days of Bach flower therapy in the three groups.

Variables	Groups		
	A (Control)	B (100 μL)	C (200 μL)
Food intake (g)	39.50[a]	29.67[a]	37.80[a]
Body weight gain (g)	83.83[a]	63.00[a.b]	48.20[b]
Feces weight (g)	24.83[a]	17.33[a]	24.60[a]
Urine volume (ml)	10.13[a]	5.69[a]	7.47[a]
Kidney weight (g)	2.00[a]	2.00[a]	2.00[a]
Uric acid (mg/dl)	25.63[a]	9.53[a]	17.31[a]
Liver (g)	1.50[a]	1.67[a]	1.80[a]
Heart (g)	2.00[a]	1.83[a]	2.00[a]
Glucose (mg/dl)	118.32[a]	58.91[a]	29.62[b]
Triglycerides (mg/dl)	141.60[a]	30.83[b]	77.58[b]
Total cholesterol (mg/dl)	155.30[a]	115.42[a]	139.91[a]
HDL cholesterol (mg/dl)	12.37[b]	22.46[a]	32.54[a]

Different letters in superscript in the same row are statistically significant by Tukey's *t*-test ($P < 0.05$).

Results

No significant difference was found in food intake between groups. However, group C (200-μl group) had a significantly lower body weight gain than group A (control group). There were also no significant differences in feces weight, net and proportional weight of the kidneys, urine volume, and uric acid levels between groups (Table 1).

A significantly lower level of glycemia was found in group C compared with groups A and B (100-μl group). Groups B and C had significantly higher HDL-cholesterol and lower triglyceride levels than the control group (Table 1).

Histological analysis revealed a mild hepatic steatosis, but no cardiac, vascular or renal damage was observed in the three groups.