



EFFECTS OF *FERULA FOETIDA* EXTRACT ON BODY MASS AND DIGESTIVE TRACT MASS IN RATS

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Abstract

The study of factors affecting enzymatic catalysis is of particular importance for assessing the state of the whole organism. Therefore, the study of the effect of certain medicinal plants on the body and the digestive process in medicine or everyday life is of scientific and practical importance.

Keywords: Enzyme, extract, organism, phytopreparation, villi, proximal, medial, distal

INTRODUCTION

Medicinal herbs or plants are an important potential source of therapeutic or healing agents. Medicinal herbs are used in pharmaceuticals as medicinal agents and in daily life as spices consumed in food. One such medicinal plant is *Ferula asafoetida*. *Ferula asafoetida* has a strong sulfur-sulfur odor, is rich in medicinal substances, and has been used for centuries in many Eastern countries as a spice and as a medicinal plant in folk medicine. Recent studies have identified a number of promising active properties of *ferula*. Examples include its antioxidant, memory-enhancing, neuroprotective, antispasmodic, hypotensive, antifungal, antibacterial, anticarcinogenic, antitoxic, and antidiabetic properties. For several centuries, representatives of different peoples have been using spices to add aroma and taste to food. In addition to adding flavor to food, spices also have the property of stimulating gastric juice. They increase the production of gastric juice and help with digestion.



The mechanism of action of phytopreparations consumed in food is mainly carried out through the digestive system. They are secreted by the salivary glands, stomach, pancreas, and cells in the wall of the small intestine. With the help of enzymes, very strong absorption occurs in the intestinal walls. This digestion process is also facilitated by the folds in the intestinal wall. The villus epithelium of the small intestine ensures the selective absorption of food digestion products into the blood and lymph.

Methods

The studies were conducted in the laboratory of the Department of "Human and Animal Physiology" of the Faculty of Biology of the National University of Uzbekistan. Male white outbred rats weighing 100 ± 10 g were used in the experiments. The experimental animals were fed with standard vivarium food, and their food and water intake were unlimited. Rats were kept in a room with a temperature of 22-24°C, humidity of 40-60%, and natural light, in plastic cages measuring 50x30x28 cm, 6 per cage. Body weight was initially measured. Experimental animals were killed, the abdominal cavity was opened, the gastrointestinal tract was separated from adjacent tissues, and the mass of the intestinal mucosa was determined under cold standard conditions.

Results

When the effect of *F. foetida* extract on the mass of rat body (g), and mg of pancreas and small intestine mucosa was studied, the results were as follows. 1 mg/kg and 2 mg/kg *F. foetida* extract intragastrically showed a statistically significant increase in body mass of 15.5% and 16.4%. If the body mass of rats in the control group was 85.0 ± 1.1 g, in rats that received 11 mg/kg *ferula* extract chronically, this value was 98.2 ± 1.0 g, and in animals that consumed 2 mg/kg extract, the body mass was recorded at the level of 99.0 ± 1.0 g. Pancreas mass was 7.3 ± 0.3 g in control and group 1 and 2 rats, respectively; It was 7.4 ± 0.2 g and 7.6 ± 0.2 g, that is, *F. foetida* extract to animals did not affect the mass of the pancreas. The mass of the small intestine mucosa increased significantly under the influence of *Ferula* extract, unlike the mass of the pancreas. The mass of the



small intestine mucosa was 4.1 ± 0.3 g when the extract was administered at a dose of 1 mg/kg; and 2 mg/kg F. The mass of the small intestine in rats receiving foetida extract intragastrically was 4.6 ± 0.2 , in the control group, this size was equal to 3.8 ± 0.3 g (Fig. 1).

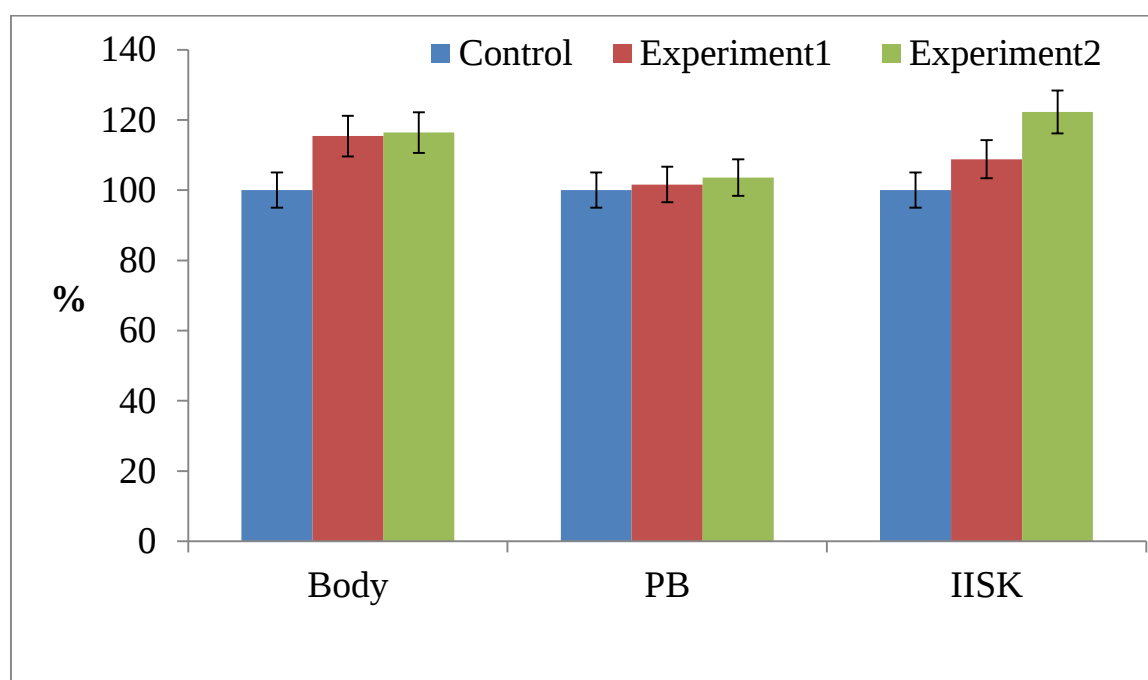


Fig. 1. Effect of *F. foetida* extract on body weight of rats, compared to the control group, which was taken as 100% (Mean $\pm$ m; n=6)

Note: PB and IISK – pancreas and small intestine mucosa; * - 0.05; ***- 0.001 – statistically significant compared to control values.

Thus, *F. foetida* extract to rats intragastrically induced significant changes in body and digestive organ mass. Body mass and small intestinal mucosal mass increased in a dose-dependent manner. The mass of the pancreas does not change. The mass of the mucosa in various parts of the small intestine. The mass of the mucosa of the body and pancreas and the entire small intestine. Since the diameter of the small intestine is the same throughout its length, its mass in the proximal, medial and distal sections was also determined (Table 1).



Table 1

Effect of *Ferula foetida* extract on the mass (g) of the mucosa layer in different sections of the small intestine of rats ($M \pm m$; $n=6$)

Intestinal sections	Group of animals		
	Control	F. foetida(1mg/kg)	F. foetida(2mg/kg)
Proximal	1,7 $\pm$ 0,4	1,9 $\pm$ 0,03	2,0 $\pm$ 0,1
%	100,00	108,2	114,0
P	-	<0,01	P<0,01
Medial	1,03 $\pm$ 0,2	1,18 $\pm$ 0,2	1,4 $\pm$ 0,1
%	100,0	114,6	136,1
P	-	>0,5	<0,05
Distal	1,0 $\pm$ 0,2	1,1 $\pm$ 0,1	1,2 $\pm$ 0,1
%	100,0	109,16	121,9
P	-	>0,5	>0,05

Table 1 shows that both doses of ferula extract increased the mass of the mucosa in the medial part of the intestine. Such an increase was 8.2% when the extract was



given at a dose of 1 mg/kg for 28 days. 2 mg/kg *F. foetida* extract was 14.0% when administered intragastrically to rats.

Thus, the mass of the small intestinal mucosa increases in a dose-dependent manner under the influence of *ferula* extract. While the increase in the mass of the small intestinal mucosa under the influence of the herbal preparation was statistically significant in the proximal and medial parts of the intestine, the increase in the mass of the mucosa under the influence of *ferula* extract in the distal part was not statistically significant.

Conclusion

In conclusion, *F. foetida* extract dose-dependently increased body mass and small intestinal mucosal mass when administered intragastrically to rats. The increase in the mass of the mucous membrane of the small intestine under the influence of the phytopreparation is more pronounced in the proximal and medial sections of the intestine than in the distal part.

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