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Study of the Digestive Action Mechanism of an Infusion Prepared with "PAICO" (Chenopodium Ambrosioides)

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Abstract

In Argentina, ethnomedicine has been recognized for more than five hundred years. Only a small amount of vegetables with medicinal active ingredients have been studied to date.

The present work reviews the possible components and the mechanisms of action of an infusion prepared with a vegetable from this area of Gobernador Gregores, Santa Cruz, Argentina, (48.75 S - 70.24 W) which local residents call "paico "(Chenopodium ambrosioides). Said infusion is made using the aerial part of the vegetable and is mainly used as a digestive. The objective of this trial was to find "in vitro" the pharmacological properties of the infusion of "paico" ("I.P."). As biological material, paico leaves and seeds collected in autumn, totally crushed in mortar with pylon, were used. The water used was always distilled. Egg white was also used. The reagents used were: Hydrochloric acid (0.1 N HCl), commercial albumin (BSA) from Lab. Biorgen and Biuret and casein reagent from Lab. Francisco Walz. The following tests were carried out in the School Laboratory of the Agricultural School No. 1 in order to estimate the activity of the infusion: 1 - Hydro-distillation of the essential oil. 2 - Biuret reaction. 3 - Action of the ("I.P.") on the pH of a protein solution.

1-Hydro-distillation of essential oil. The equipment was assembled in a similar way to the Clevenger distiller. The crushed paico leaves and seeds were worked. Careful heating to boiling with adequate reflux began for 90 minutes with the addition of water distilled by the lock to always maintain the original water level. The apparatus was allowed to cool slightly and the water and oil were collected in an Erlenmeyer flask. This procedure was repeated numerous times.

2-Biuret reaction. The Biuret reaction is a characteristic reaction of the protein search. In the procedure of this test, the raw egg white was stirred in one liter of cold water and brought to a boil, without stirring. It leaked. The liquid obtained is a fine suspension of denatured albumin (albumin). On the other hand, ("I.P.") was prepared. Placed in 100 ml of water, 5 g of crushed paico leaves and seeds were brought to a boil for 2 minutes and allowed to cool down later. It was left to stand for 12 minutes and filtered. The following mixtures were prepared in four test tubes: Tube 1.- 6 ml of albumin + 6 ml of water. Tube 2.- 6 ml of albumin + 1.5 ml of water + 4.5 ml of HCl, 0.1 N. Tube 3.- 6 ml of albumin + 1.5 ml of ("IP") + 4.5 ml of HCl1, 0.1 N. Tube 4. - 6 ml of albumin + 1.5 ml of ("IP") + 4.5 ml of water. 2 ml of Biuret's reagent was placed in all tubes. Then the tubes were placed in a water bath, at 40 ° C. A few minutes later, the tubes take on a pinkish-purple color, only in Tube 3 did a rinsing occur, this is a consequence of the activity of the ("IP ") That, in an acidic medium, has hydrolyzed albumin.

3-Action of the ("I.P.") on the pH of a protein solution. A third test was carried out using commercial albumin and casein as protein sources to which the ("I.P.") was added. 1 gram solutions of the two protein sources were prepared separately in beakers, to which was added 40 ml of distilled water. 5 ml of the ("I.P.") was placed into each solution thus prepared. In another glass, he placed 1 g casein and 40 ml of distilled water, in the next 1 g of commercial albumin and 40 of distilled water and in the last beaker ("I.P."). Immediately in all the beakers the pH was continuously measured for 15 minutes.

The results of the tests were: in the hydro-distillation of the essential oil a few drops of the essential oil were obtained, approximately 0.5 ml for each test. They are reserved for after several tests and having collected about 10 ml, send to a laboratory with a chromatograph.

The results of the Biuret reaction were: In the mixture in Tube 3: albumin + ("IP") + HCl, the Biuret reaction was positive, as it appeared pink, which later became lighter until the color was already it could not be identified unlike the other mixtures that remained with the same color when being in a water bath with a temperature of 40 ° C. This is because the ("I.P.") in the presence of hydrochloric acid mimicking the digestive function, allowed the hydrolysis of proteins, which in this case is albumin. It broke its peptide bonds at the level of the amino acids phenylalanine and tyrosine, leaving as final product: polypeptides, which are the

specific reagents for the Biuret reaction.

In the action of the ("I.P.") on the pH of a protein solution. A rapid decrease in pH was observed in the first 15 minutes, decreasing from pH 6.5 to pH 4.9, not differing by the type of protein used. This is indicating the slight action of the ("I.P.") on the proteins. In the other vessels, no variation in pH measurement was observed during the test period.

It is concluded in this first approach to the topic that according to the chemical determinations developed in this study, the ("I.P.") contains essential oils that explain its action, but also substances that act by stimulating digestion, through a proteolytic action.