



The therapeutic use of insulin (*Cissus verticillata* L.), in the treatment of diabetes mellitus

O uso terapêutico de insulina (*Cissus verticillata* L.), no tratamento de diabetes mellitus

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1 INTRODUCTION

Studies on medicinal plants have made great progress, especially in defending Amazonian biodiversity, which is now so coveted by other countries on the planet. Traditional knowledge has been recognized by the WHO, due to factors such as the existence of great inequalities in health care for certain regions and populations existing in various geographical areas of the country, as well as the ease of access to medicinal plants by these populations, who still suffer from difficult access to public health services. In addition, the use of traditional phytotherapy as an alternative to public health treatments has been occupying spaces and reaching several populations where the official medical system is unable to meet.

The use of plant resources as medicines is closely linked to the issue of popular culture, which is passed down from generation to generation. This ethno-knowledge influences the rational use of available medicinal plant resources, creating a condition of dependence on them for the survival of traditional populations.



2 OBJECTIVE

To analyze the traditional therapeutic uses of the plant *Cissus verticillata* (L), popularly known as "Insulin", in the treatment of *Diabetes Mellitus*.

3 METHODOLOGY

The research was carried out in the community of Ponta do Urumajó, municipality of Augusto Corrêa-Pará; it is based on a qualitative approach of the descriptive type (SILVA, 2008), through field research (SILVEIRA; CÓRDOVA, 2009); using as data collection techniques the application of *free listing* with key informants, interviews, application of forms, photographic records of the species "Insulin", observation, video recording and photographs. Subsequently, the data collected regarding the phytotherapeutic uses of the "Insulin" plant were described according to what is done in the community, observing the active principles and toxicity present in the species, based on published bibliographies. The data were analyzed from the triangulation of information collected in the community, in specialized bibliographies and in international databases such as: PUBMED, SCIELO, LILACS, MEDLINE, GOOGLE SCHOLAR, LATINDEX and THE PLANT LIST.

4 DEVELOPMENT

The Ponta do Urumajó community over the years has determined its own guidelines for the use and management of plant species, seeking in natural resources and traditional knowledge the improvement of the health of its residents, using them in the most diverse ways, in addition, of course, to know, with great property, the practices employed for the use of medicinal plants, which are used for health care.

The use of medicinal species in the community is also related to the mythical, and to the knowledge that has been built about nature, time and space, which end up regulating and influencing social behavior, knowing that there are plants useful for specific types of diseases, as is the case of Insulin (*Cissus verticillata* L) that controls diabetes. This is evidenced when the local use of the plant was recorded, since this ethnospecies is used through the tea of the leaves *in natura* through criteria of empirical experiences of the social group.

Studies on the pharmacological actions of *Cissus verticillata* have shown that it has antidiabetic activities (PEPATO, 2003, VIANA *et al.*, 2004; NEGRI, 2005). Studies by Pepato *et al.* (1998) and Barbosa *et al.* (2002) show that the hypoglycemic action of



this plant is due to the presence of flavonoids in its chemical composition. On the other hand, Alexandre (2007) highlights tyramine as the active principle responsible for the hypoglycemic action in the species. In other studies it was found that *Cissus verticillata* also has antibacterial, anticonvulsant, antitumor, antioxidant, anti-inflammatory, antiepileptic, antihypertensive, antipyretic, antirheumatic, hypotensive and photohemolytic actions (ALEXANDRE, 2007; ROSENDO, 2009; LUCENA *et al.*, 2010; MADARIAGA *et al.*, 2010; FEIJÓ *et al.*, 2012).

There are medicinal plants that do not have enough data to prove their safety, which can cause health impacts on those who are consuming the species (ALCANTARA *et al.*, 2015). In this sense, toxicology comes to evaluate the harmful effects of chemical substances on the living organism, seeking to analyze the negative response of substances at the biochemical, cellular and molecular levels. The principle of toxicology is to determine the level of risk of human consumption in relation to the various products and thus establish the necessary and safe conditions of exposure to the agents arranged. In this sense, the species studied needs to be subjected to toxicity tests to understand the dosages to be administered.

5 FINAL CONSIDERATIONS

The community holds a large body of knowledge about the environment in which they are inserted. Traditional knowledge about the use of natural resources, here more specifically, the use of plants is extensive in Ponta de Urumajó. The practices of using medicinal plants to treat diseases are woven over time and passed down from generation to generation.

Regarding the use of medicinal plants in Ponta de Urumajó, it was found that the community has great knowledge about the therapeutic properties of the use of the leaves of *Cissus verticillata* (L.) popularly known as "insulin" for the treatment of diabetes. The use of the species in question is validated by technical studies already carried out, which show that the plant has potential for the treatment of the disease. It is noteworthy here that this is favored by the presence of hypoglycemic active principles such as Flavonoids and Tyramine.



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