

## Documents

Mrabti, H.N.<sup>a</sup>, Sayah, K.<sup>a</sup>, Jaradat, N.<sup>b</sup>, Kichou, F.<sup>c</sup>, Ed-Dra, A.<sup>d</sup>, Belarj, B.<sup>e</sup>, Cherrah, Y.<sup>a</sup>, Faouzi, M.E.A.<sup>a</sup>

**Antidiabetic and protective effects of the aqueous extract of *Arbutus unedo* L. in streptozotocin-nicotinamide-induced diabetic mice**

(2018) *Journal of Complementary and Integrative Medicine*, 15 (3), art. no. 20170165, . Cited 1 time.

**DOI:** 10.1515/jcim-2017-0165

<sup>a</sup> Faculté de Médecine et de Pharmacie, Laboratoire de Pharmacologie et Toxicologie, l'Équipe de Pharmacocinétique, Mohammed v University in Rabat, BP 6203, Rabat Instituts, Rabat, Morocco

<sup>b</sup> Department of Pharmacy, Faculty of Medicine and Health Sciences, An-Najah National University, P.O. Box 7, Nablus, Palestine

<sup>c</sup> Unité d'Histologie et Anatomie Pathologique, Institut Agronomique et Vétérinaire Hassan II, Rabat, Morocco

<sup>d</sup> Team of Microbiology and Health, Laboratory of Chemistry-Biology Applied to the Environment, Moulay Ismail University, Faculty of Science, BP. 11201 Zitoune, Meknes, Morocco

<sup>e</sup> Laboratoire de Biochimie Toxicologie Hôpital Militaire d'Instruction Mohammed v Rabat, Rabat, Morocco

**Abstract**

Diabetes mellitus (DM) is currently a major health problem and the most common chronic disease worldwide. Traditional medicinal plants remedies remain a potential adjunct therapy to maintain better glycemic control while also imparting few side-effects. *Arbutus unedo* L. has been traditionally used to manage several diseases including diabetes. This study was undertaken to contribute the validation of the traditional use of *Arbutus unedo* L. (*Ericaceae*) in the treatment of diabetes. In-vitro antidiabetic effect of the *A. unedo* roots aqueous extract was conducted using  $\alpha$ -glucosidase and  $\alpha$ -amylase assays. While in-vivo antidiabetic activity was conducted using streptozotocin-nicotinamide (STZ-NA) induced diabetic mice. Diabetic animals were orally administered the aqueous extract in 500 mg/kg of body weight to assess the antidiabetic effect. The blood glucose level and body weight of the experimental animals were monitored for 4 weeks. In addition, the histopathological examination of the treated mice pancreas was also conducted to observe the changes of  $\beta$ -cells during the treatment process. The extract produced a significant decrease in blood glucose level in diabetic mice. This decrease was equivalent to that which observed in mice treated with a standard after 2-4 weeks. In addition, the plant extract exhibited a potent inhibitory effect on  $\alpha$ -amylase and  $\alpha$ -glucosidase activity with IC50 values of  $730.15 \pm 0.25$   $\mu$ g/mL and  $94.81 \pm 5.99$   $\mu$ g/mL, respectively. Moreover, the histopathologic examination of the pancreas showed a restoration of normal pancreatic islet cell architecture which observed in the diabetic mice treated with plant extract. The aqueous *A. unedo* roots extract has a significant in vitro and in vivo antidiabetic effects and improves metabolic alterations. The revealed results justify its traditional medicinal use. © 2018 Walter de Gruyter GmbH, Berlin/Boston.

**Author Keywords**

antihyperglycemic activity; *Arbutus unedo* L.; histopathologic diagnosis;  $\alpha$ -amylase;  $\alpha$ -glucosidase

**Index Keywords**

alpha glucosidase, amylase, antidiabetic agent, *Arbutus unedo* extract, glucose, metformin, nicotinamide, plant extract, unclassified drug; animal experiment, animal model, animal tissue, antidiabetic activity, aqueous solution, *Arbutus unedo*, Article, body weight, drug safety, enzyme inhibition assay, *Ericaceae*, glucose blood level, glycemic control, histopathology, IC50, in vitro study, in vivo study, male, mouse, nonhuman, pancreas, pancreas islet beta cell, plant root, streptozotocin nicotinamide induced diabetes mellitus, streptozotocin nicotinamide induced diabetes mellitus, streptozotocin-induced diabetes mellitus, traditional medicine, treatment duration, validation process

**Publisher:** De Gruyter

**ISSN:** 15533840