EDITORIAL

Antioxidants of honey in perspective of blood glycaemic control

Abdul Rehman Khan

Diabetes is a heterogeneous metabolic disorder that is characterized by an abnormal increase of blood glucose level over the range of 126 mg/dl in fasting condition.[1] Prolonged stay of glucose in blood leads to hyperglycaemia, which is an established index of diabetes development. Chronically, this high blood sugar predisposes to different types of complications. Hyperglycaemia is a key factor in the pathogenesis of diabetic complications by increasing protein glycation and gradual buildup of advanced glycated end products (AGEs) in body tissues.[2] There are receptors for AGEs (RAGEs) found on different cells. Interaction of AGEs with RAGEs is responsible to change gene expression, intercellular signaling pathways and an increased level of free radicals/reactive oxygen species (ROS) that is contributing to the pathobiology of diabetic complications.[2-4]

Among several approaches to treat diabetes, bioactive compounds/antioxidants in plant based natural products are becoming more attractive due to their multiple target sites in body. Concomitantly, these antioxidants may counterbalance the activity of two digestive enzymes i.e. α-amylase and α-glucosidase, stimulate insulin production/secretion from pancreatic β cells and also enhance glucose channels opening in various body tissues.[5] In search for finding potent dietary antioxidants, numerous studies have been conducted on different plants, crops and culinary herbs/spices. Antioxidant-rich diets have been proposed as attractive candidates for diabetes management. Recently, a study reported the binding mechanism of phytochemicals with two enzymes (α-amylase and β-glucosidase) to ameliorate their antidiabetic and antiglycation potentials. It is also intrigued that amylose-antioxidants complex formation may modulate starch digestion.[6]

One of the natural products is palatable honey which is a juicy excretion of honeybees and is derived from nectar of plant flowers.[7] In other words it is true to say that bioactive compounds/antioxidants in honey come from plant (floral) origins.[8] However, in comparison with the other plant based natural products, antioxidants in honey are readily available to consume in delicious semi-liquid form due to sugar contents.[9] Thus, the consumption of floral/plant based antioxidants through honey suppress oxidative stress to prevent vital body organs from free radicals/ROS attacks.[7] It also decreases starch digestibility in gastrointestinal tract, reducing blood glycaemic response.[10] Therefore, due to high antioxidative potential honey seems to be a highly efficacious and effective supplement for many of the pathologies/ailments. [8,11,12] But diabetic patients are reluctant to use this natural honeybee produce.[9] However, previously published studies reported that blood glycaemic response of various honeys is not the same because of variations in antioxidant activities and levels.[7,13,14] In addition to this, antioxidant capacity and physicochemical properties of honeys are also affected by seasonal and climatic conditions.[15] Differences in antioxidants may influence the glycaemic index of honeys which is between 32 to 87 GI values. The efficacy of honeys may be accomplished by assessing its glycemic index and antioxidant potential as a part of human studies with specific reference to diabetes mellitus.[16-18]

Since, antioxidant activity/potential depends mainly on the floral origin of nectar from different regions and is influenced by seasonal and environmental variations. To our knowledge, no any such comprehensive research work was conducted before to assess antioxidants and/or glycaemic indices of honeys derived from various floral origins in Pakistan including Azad Kashmir. In light of above described facts, prospective research is warranted to identify different floral origins from which honeys are derived/produced. Hopefully, in futuristic studies low glycaemic indexed honey(s) will be exploited as natural healthy alternative sweetener(s) to refined sugar and antioxidant suppressant by preventing harmful effects of ROS. Furthermore, vital honey(s) along with floral origin(s) can be exploited at commercial scale in the form of honeybee farms for diabetic patients.[9]

Obesity & Diabetes Research Laboratory, Department of Chemistry, University of Azad Jammu and Kashmir, Muzaffarabad.
Correspondence: Abdul Rehman Khan. e-mail: huzaifa_khn@yahoo.com

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