

Lycopene content of selected Egyptian foods, estimation of its intake and its effect on ace activity using diabetes rats

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In spite of the interest in the role of potent antioxidant properties of lycopene in the prevention of chronic diseases, little is known about the lycopene content of the Egyptian foodstuffs and the contribution of these products to the intake of lycopene. The lycopene content of tomatoes, tomato products and other products available on the Egyptian market was estimated by high performance liquid chromatography, and provided to Egyptian representative sample population to estimate the daily intake. In addition, we examined the association between lycopene intakes and development of type 2 diabetes mellitus complications regarding the effects of angiotensin-converting enzyme (ACE) activity. We investigated HbA1C and the expression of ACE in a rat model of type 2 diabetes (D), diabetes + lycopene (DL, 45 mg/kg single-dose streptozotocin, and 10 mg lycopene/kg/day), lycopene (L) and healthy group (H) for 28 days. The average intake levels of lycopene in Egypt are higher than the levels required for its beneficial biological effects, with different variations between different populations (socio-economic- rural-urban.....). The main sources of lycopene were fresh tomatoes with highly percentage contribution of the total amount of this carotenoid in the diet. Blood glucose levels and HbA1c% in (D) and (DL) groups increased significantly compared to (H) and (L) groups. ACE activity in the (H & DL) groups was significantly lower than in the (L & D) groups, respectively. These results have implications for the evaluation of the daily intake of lycopene in Egypt and raise important questions for establishing a recommendation for optimal daily lycopene intake. Lycopene intake inhibits the plasma ACE activity, a potential marker of development of diabetic complications particularly diabetic renal disease and hypertension.

Biography

Aly Ezz El-Arab is Prof. Dr. of Applied Nutrition at National Research Center. He received his M. Sc. in Biochemistry from the Agriculture Faculty of Cairo in 1991, and completed a doctoral fellowship in the Biochemistry Institute at Detmold, Germany. Twenty six journal articles were published in peer-reviewed journals and have been the PI or co-PI or candidate on 7 national and international funded projects. Dr. Ezz El-Arab has published 5 books concerning nutrition for different age groups. He has "The state prize for creativity and innovation, 2011" in addition to two other awards. He has been a thesis/dissertation advisor for 6 pre-doctoral and doctoral students. He got two patents.