Bitter gourd (Momordica charantia): A potential mechanism in anti-carcinogenesis of colon

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TO THE EDITOR

Bitter gourd (Momordica charantia), has received widespread attention in the scientific community due to its beneficial effects, including anti-diabetic, anti-cancer and anti-inflammatory effects in laboratory studies[1]. However, a well-defined mechanism by which this important plant food exerts its beneficial effects has not been elucidated. We present some of the latest findings on the plant’s effects against colon cancer.

Bitter gourd seeds are enriched with 9c 11t 13t (9 cis, 11 trans, 13 trans) conjugated linolenic acid (CLN)[2]. CLN collectively refers to a group of linolenic acid (18:3; c9, c11, c13) derivatives with positional (double bonds in carbon 9, 11 and 13 or 8, 10 and 12) and geometric (cis, Z and trans, E) isomers. Interestingly, 9c 11t 13t CLN-enriched bitter gourd seed extracts protect colon from chemical-induced carcinogenesis in rats[3]. The fatty acid significantly reduced the incidences as well as multiplicity of colon tumors as well as cell lines derived from colon cancer[4]. Expression of this receptor subtype in colon cells has been found equal to or even greater than adipose tissue, where it was originally characterized[5]. PPAR activation has been shown to inhibit cell growth, promote differentiation and stabilize genes that are altered in colon cancer[6,7]. The current prevailing belief is that PPARγ’s ability to enhance differentiation and apoptosis is a positive event, associated with cell-cycle arrest and reduced proliferation[8,9]. Similar beneficial effects (growth inhibition, induction of apoptosis) were observed with bitter gourd against colon carcinogenesis[10].

Taken together, there is an association of PPARγ in CLN-mediated effects in the colon. Further studies are required to understand the detailed mechanism.

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