

# The effects of *Curcuma longa* on metabolic syndrome related to obesity

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## ABSTRACT

Once obesity has become a global health problem, the incidence of obesity related diseases also reported an increasing trend, one of the most serious such issues being represented of diabetes mellitus. Therefore it is widely known the fact that obese, diabetic patients are predisposed to the apparition of a significant number of complications, associated with significant economic impacts.

The aim of the current paper is to discuss about the possible benefits of *Curcuma longa* administration in such patients.

**Keywords:** diabetes mellitus, dyslipidemia, *Curcuma longa*, obesity

## INTRODUCTION

Obesity has become in the last decade maybe the commonest health issue affecting both adults and children worldwide, with an alarming increasing incidence [1,2]. Moreover, a significant number of cases rapidly develop different other obesity related diseases such as arterial hypertension, diabetes mellitus, dyslipidemia or chronic vascular issues, transforming the obese patient into one of the greatest resource consuming patients. All these facts have an extreme effect on both patients wellbeing and health service economy [3,4]. Therefore, attention was focused on identifying cheap and efficient solutions which might bring a positive impact in such cases [5-7]. In this respect, particular attention was given to the homeopathic principles. The aim of the current paper is to analyze the influence of *Curcuma longa* on the metabolic syndrome related issues [8,9].

## THE EFFECTS OF *CURCUMA LONGA* ON DIABETES

Also known as Turmeric, *Curcuma longa* is a plant with important healing capacity used as a tincture or extract; studies conducted so far on rabbits came to demonstrate that this plant also diminishes the inflammatory response and increases collagen synthesis inducing in this way a more rapid wound contraction [8]. The active principle in this plant, curcumin proved to have anti-inflammatory, antioxidant, antidiabetic and anti-infectious effect; an interesting mechanism through which curcumin influences the inflammatory and neoplastic processes are represented by the inhibitory action on tumor necrosis factor alpha (TNF- $\alpha$ ) in humans. Meanwhile, similarly to *Calendula officinalis*, *Curcuma longa* regulates the synthesis of interleukin 1,6,8 and 12 [9].

The anti-diabetic effect has been demonstrated through the fact that turmeric is able to reduce

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the serum levels of glucose, to decrease the values of glycosylated hemoglobin and to decrease the insulin resistance. Another important action consists of decreasing the hepatic synthesis of glucose and increasing the uptake of glucose at the level of the skeletal muscle; meanwhile the capacity of activating the glycolytic enzymes and of hepatic glucokinase will lead to an important decrease of the serum levels of glucose [9-12].

## THE EFFECTS OF *CURCUMA LONGA* ON OTHER METABOLIC SYNDROME RELATED DISEASES

Oral administration of *Curcuma longa* also seems to have a protective effect against atherosclerosis and dyslipidemia, the presence of increased amounts of this homeopathic principle being associated with an improvement of the hepatic metabolism of cholesterol [13]. Meanwhile, oral administration of the product in overweight or obese patients is related with the improvement of liver steatosis, translated into a decrease of the serum levels of gamma-glutamyl transferase, liver transaminase and serum cortisol [14]. This administration in obese patients also seems to induce and positively modulate the process of weight loss by inhibiting the preadipocytes and adipogenesis, by stimulating their apoptosis; through all these mechanisms a reduction of body fat, waist line and body mass index is to be expected [15-17]. Arterial hypertension, another frequently encountered health problem which is part of the metabolic syndrome also seems to be successfully influenced by the administration of *Curcuma longa*; one of the most important reasons for developing arterial hypertension is represented by the presence of an increased oxidative stress which further conducts to angiogenesis and vascular hypertrophy. The administration

of turmeric seems to decrease the oxidative stress, the production of superoxides and of angiotensin II and by downregulating the angiotensin II type 1 receptors [18-21]. The benefits of *Curcuma longa* in treating arterial hypertension were initially demonstrated in animal studies; therefore, Boonla et al. conducted a study on mice in which the left renal artery was clipped; the resulting arterial hypertension was treated by the administration of *Curcuma longa* extract [19].

## THE ANTITUMORAL EFFECT OF *CURCUMA LONGA*

Another significant effect of *Curcuma longa* is its antioxidant activity, having a significant effect against different types of free radicals which seem to further have a toxic or carcinogenic effect [1]. Therefore, in this respect, is easily understandable the fact that adding an extract of *C. longa* in a topical vaginal product seems to increase the local efficacy against the development of different types of infections as well as on the capacity of wound healing; meanwhile, decreasing the level of interleukines and TNF- $\alpha$  seems to have a protective role in regard to uterine cervix cancer development.

## CONCLUSIONS

Adding a homeopathic principle such as *Curcuma longa* as part of the treatment of obese patients seems to have a significant number of protective effects by its anti-inflammatory, anti-infectious and anti-oxidant capacities; therefore in such cases, an improvement of the metabolic syndrome related complications is to be expected. Moreover, through the anti-oxidant capacity, *Curcuma longa* is expected to have also an antitumoral effect.

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