



## Research report

## Chewing gum may be an effective complementary therapy in patients with mild to moderate depression


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## ARTICLE INFO

## Article history:

Received 21 July 2012

Received in revised form 26 January 2013

Accepted 3 February 2013

Available online 12 February 2013

## Keywords:

Chewing gum

Depression

Stress

## ABSTRACT

Previous studies indicated that chewing gum may relieve stress and depression. There have, however, not been a significant number of studies on clinical usage of chewing gum. In the present study, 30 patients with mild to moderate depression were given either medication combined with chewing gum, or medication only, for 6 weeks. Turkish adaptation of Hamilton Rating Scale for Depression (HAM-D) was used to measure depression levels. Assessments were conducted by the same physician both before, and after treatment. The physician who was responsible for the assessment was not aware of the group allocation. Changes in main HAM-D scores and each item were analyzed by independent samples *t* test and Chi-Square test, respectively. Those patients who were administered chewing gum responded better to the treatment than patients who took medication only. The most beneficial effect of chewing gum was observed on the gastrointestinal symptoms, e.g. loss of appetite, and flatulence among others. These results indicate that chewing gum may not be directly effective on depressed mood; however, it may reduce the symptoms originating from depression.

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## Introduction

There have been a number of studies investigating the effects of chewing gum on stress, anxiety and mental status (Akiyo et al., 2011; Johnson, Jenks, Miles, Albert, & Cox, 2011; Smith, 2010; Smith, Chaplin, & Wadsworth, 2012; Zibell & Madansky, 2009). The results of these studies concur that chewing gum reduces stress levels and anxiety. Although these studies provided useful information on the reducing effect of chewing gum on stressed conditions, there are a limited number of findings on clinical usage of chewing gum in stress and depression reduction. Previous studies often engaged with induced or non-induced stress conditions but not in clinically diagnosed patients.

Problems associated with stress are closely related to mental dysfunctions which can occur in the distant future. Depression, as a mental health impairing disorder, is one of the conditions that causes stress to reach a peak, and leads to cognitive disintegrations if left untreated. Unfortunately, many undiagnosed and/or untreated cases of depression ultimately result in suicide. Cases that do not result in suicide are closely associated with loss of ability and cognitive dysfunctions.

Given that depression is a potentially debilitating disorder, new alternative and complementary therapies for the treatment of

depression have been suggested. Therapeutic approaches, such as omega-3 fatty acids, St. John's wort (*Hypericum*), folate, S-adenosyl-L-methionine (SAME), acupuncture, light therapy, exercise, and mindfulness psychotherapies, revealed promising results in the treatment of major depressive disorder (Freeman et al., 2010). It has been shown that St. John's wort, for example, is also effective in treating mild to moderate depression (van der Watt, Laugharne, & Janca, 2008).

Recently mastication has become a popular approach to prevent cognitive dysfunction. It was reported that chewing gum is directly linked to the maintenance of the hippocampal function and it leads to an increase in the prefrontal cortex activity (Ono, Yamamoto, Kubo, & Onozuka, 2010). Several psychological studies using human subjects have shown that chewing, or even sucking a piece of sugar-free, spearmint flavored chewing gum, improves the cognitive activity – especially in working-memory tasks (Baker, Bezance, Zellaby, & Aggleton, 2004; Scholey, 2004; Stephens & Tunney, 2004a, 2004b; Wilkinson, Scholey, & Wesnes, 2002). Position Emission Tomography (PET) studies revealed that mastication increases blood-flow in various cortical and cerebellar regions; suggesting that chewing increases the availability of blood-borne glucose, thereby improving cognitive performance (Momose et al., 1997; Sünram-Lea, Foster, Durlach, & Perez, 2002). Wilkinson et al. (2002) also reported that chewing increases heart rate, suggesting enhanced sympathetic activity to increase blood glucose level and/or arousal level during cognitive tasks. An fMRI based

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