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# CAN HONEY CURE CANCER? - CLINICAL CASES REPORT

**Rasha Alhaj***

*Queen Mary University of London,*
*London, UK*
*Email: Rasha.alhaj@qmul.ac.uk*

## ABSTRACT

**Purpose:** The aim of this paper is to share clinical case reports on the effect of honey on cancer patients.

**Findings:** In the first clinical case study, honey significantly reduced the number of leukaemia cells. The second clinical case study confirmed the findings with persuasive evidence: honey reduced the stage of the cancer cells. What is special about this case is that only honey therapy was applied without any other treatment.

**Originality/value of the paper:** The first clinical case study confirms the anti-cancer effect of honey on cancer patients.

**Practical implications:** The two clinical case studies give us an indication of the effect of honey on cancer patients. It is strongly recommended that a pilot study is carried out on one type of cancer, such as breast cancer, since both incidents and mortality rates are high due to this type of cancer in Sudan.

***Keywords:*** Cancer; incident; mortality; honey; antioxidants; leukemia; breast cancer

*Corresponding Author

## INTRODUCTION

Cancer is considered the second leading cause of death in the world after cardiovascular diseases (WHO, no date). In 2018, 17 million new cancer cases were diagnosed in the world, and 9.6 million deaths occurred through cancer (CRUK, no date). In 2018, the International Agency for Research on Cancer (IARC) estimated there were 25,746 cancer incidents and deaths in Sudan, 10,218 in males and 15,528 in females (see Figure 1). The total mortality rate projected was 17,160 deaths, of which 7,327 were male patients and 9,833 were female patients.

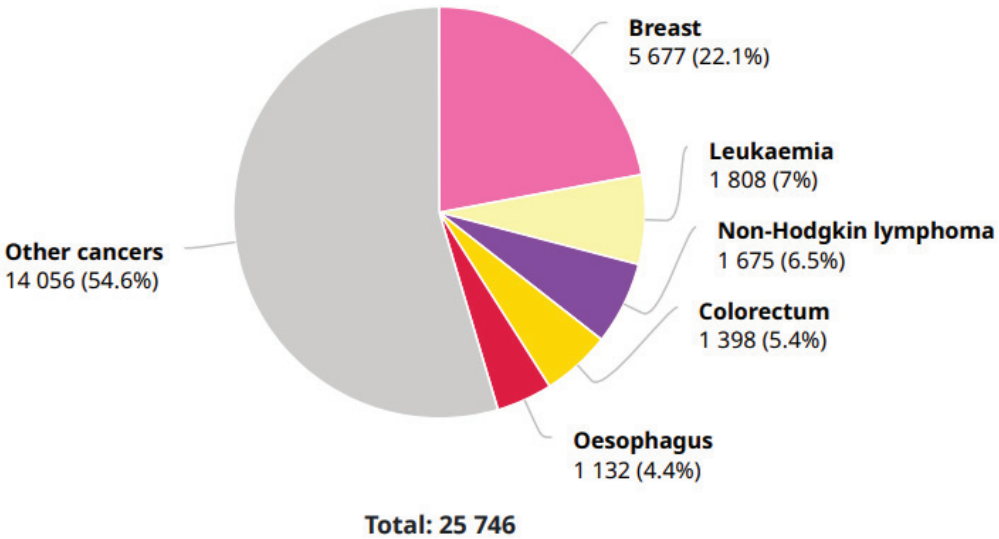


**FIGURE 1** Number of new cases in Sudan both sexes, all ages

*Source:* Adopted from Globocan, 2018 - Global Cancer Observatory

Saeed et al. (2014) reported that, between 2009 and 2010, the total number of new cancer cases in Khartoum, Sudan, was 6,771, of which 3,125 cases (46.2%) were in males and 3,646 cases (53.8%) were in females (Saeed et al., 2014).

There are different types of cancer therapies, including surgery, radiation therapy, chemotherapy, immunotherapy, targeted therapy, hormone therapy, stem cell transplant, and precision medicine. However, most of the current treatments are associated with unpleasant side effects for cancer patients; therefore, there is a need for research to continue to discover new cost effective treatment with no or few side effects.

Honey is produced by honeybees naturally from the nectar collected from flowers of different plants. It is complex and mainly composed of carbohydrates (70%–80%) in addition to a large number of minor components, including organic acids, proteins, free amino vitamins, enzymes, minerals and other different molecules (for example, pigments

and flavonoids) (Jeddar et al., 1985). Honey has long been used for the treatment of many diseases. There has been a revival of interest in the healing properties of honey because it is thought to exhibit a broad spectrum of activities, including anti-bacterial, anti-fungal, cytostatic, anti-inflammatory properties, and antioxidant properties that have come to light in recent years (Jeddar et al., 1985; Hladoń et al., 1980; Yasuko et al., 1984).

Alhaj and Purohit (2017) showed that honey inhibited cell growth significantly (by 40% to 80%) in breast cancer cell lines MCF-7 and MDA-MB-231 (see Figures 2 and 3) (Alhaj and Purohit, 2017). In 2010, a group of researchers also reported the cytotoxic effects of Indian honey on breast cancer cells (MCF-7). The honey samples were further analysed using high-performance liquid chromatography; this identified that the major phenolic constituents found in the honey samples were Dihydroxy benzoic acid, caffeic acid, ferulic acid and cinnamic acid (Jaganathan et al., 2010).

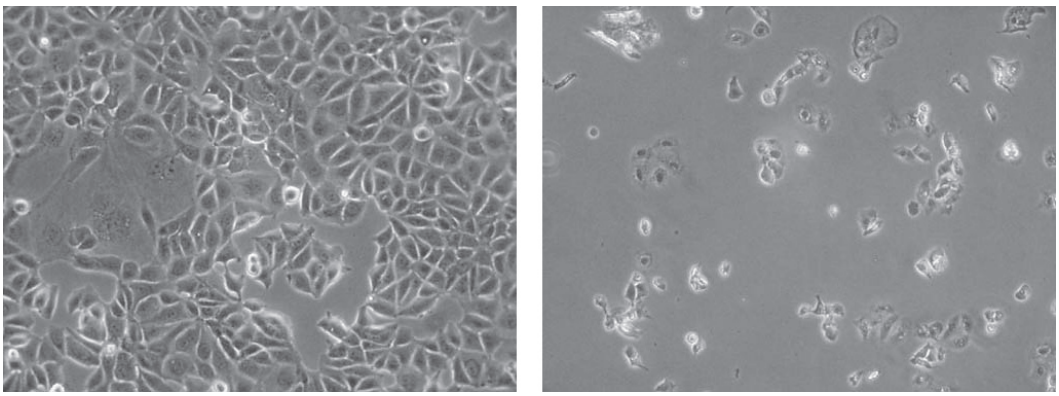

**FIGURE 2** MCF-7 breast cancer cell lines a) the control was treated with PBS, b) Treated with Western Sudanese honey (20 times final dilution) for 48 hrs (Zoom 10X)

*Source:* Adopted from Alhaj and Purohit, 2017

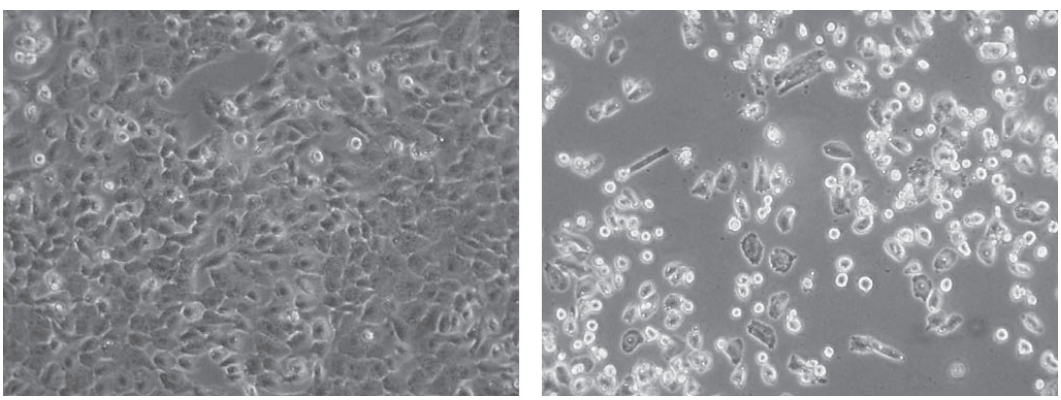

**FIGURE 3** MDA-MB-231 breast cancer cell lines a) the control was treated with PBS, b) Treated with Western Sudanese honey (20 times final dilution) for 48 hrs (Zoom 10X)

*Source:* Alhaj and Purohit, 2017

In 2011, Malaysian researchers studied the effects of Tualang honey, which is rich in flavonoids and phenolic acids, on breast cancer cell lines and normal breast cell lines. They found that Tualang honey has a cytotoxic effect on both MCF-7 and MDA-MB-231 breast cancer cell lines, but no cytotoxic effect on MCF-10A, a normal breast cell line. The researchers suggested that "the cytotoxic effect of Tualang honey is specific and selective to the breast Cancer cell lines". This is important because selectivity and specificity are critical characteristics of a good chemotherapeutic (Fauzi et al., 2011).

## CLINICAL CASE STUDIES

### Case study 1

In January 2016, a 40-year-old male diagnosed with T-cell acute lymphoblastic leukaemia (T Cell ALL) was recommended to receive eight chemo sessions by his oncologist. The patient only tolerated two sessions and ultimately his specialist referred him for a bone marrow transplant (BMT). The BMT initially seemed to work well, but the bone marrow biopsy showed a 40% blast in the leukaemia cells. As a result, the patient had to have another transplant from the same donor after which he developed more complications, including graft versus host disease (GVHD); this seemed like a healthy sign that the BMT was working. A few weeks later, the patient became so ill and exhausted, and the leukaemia blast rose to 54%. The doctors gave up on him. All his family and extended family members gathered around him to say goodbye. After that, the patient started to use honey therapy.

### Case study 2

A 70-year old woman was diagnosed with breast cancer in the left breast. The biopsy showed some malignant ducts and solid sheets of malignant cells invading the stroma. The tumour cells were oestrogen receptors (ER) and progesterone receptors (PR) positive, and Her-2 neu negative. The oncologist recommended chemotherapy treatment for her. The patient refused to take the chemo and choose to have honey therapy only.

## RESULTS

### Case study 1

The patient started with a honey regimen on 23 January 2017. On 24 January 2017, a bone marrow biopsy was done and the result showed 54% lymphoblasts in a hypocellular bone marrow background.

On 1 February 2017, another bone marrow biopsy was done and the result showed 8% lymphoblasts (one week after the prior biopsy).

On 1 March, a bone marrow biopsy showed 4% lymphoblasts, and by April the lymphoblasts had decreased to 0%.

A few months later, the patient stopped the honey treatment as he suffered severe diarrhoea. As a result, leukaemia returned more aggressively with 22% lymphoblasts. The patient used the honey therapy again, although the cancer cells were aggressive. After being treated with honey, the lymphoblasts again reached 0%. A few months later, the patient developed severe diarrhoea again and stopped the honey therapy. The patient developed more complications and he passed away in April 2018.

### Case study 2

On 31 January 2018, the lady was diagnosed with breast cancer; she opted for the honey regimen only. On 3 December 2018, the histopathology result reported breast tubules lined by unremarkable cells and a focus of cells displaying mild nuclear atypia.

## DISCUSSION

Several reports have shown the effectiveness of natural honey in cancer treatment. Honey has a wide range of phytochemicals, including polyphenols, which act as antioxidants. Antioxidant properties have several preventive effects against different diseases, such as cancer, coronary disease, inflammatory disorders, neurological degeneration, and aging (Jaganathan and Mandal, 2009).

A study by Alhaj and Purohit (2017) reported that there is a large molecular weight soluble component of honey that is found to have significant growth inhibitory effects on MCF-7 and MDA-MB-231 breast cancer cell lines (Alhaj and Purohit, 2017). This substance is present in all-natural honey with different percentages depending on three factors:

1. the nature of the nectar, which depends on the nature of the plant;
2. the honey bee species, only seven species of honey bee are recognised, with a total of 44 subspecies (Engel, 1999);
3. honey extraction methodology, whether a modern or a traditional method.

Mechanism of the honey therapy hypothesis:

- it increases and supports the immune system naturally, therefore benefiting us with a stronger immune system, i.e., the body is able to fight the cancer cells naturally, preventing harmful treatment such as chemotherapy and radiotherapy;
- honey has an effect on the free radicals from the cancer cells, therefore returning the cancer cells back to normal healthy cells where eventually apoptosis occurs.

In conclusion, honey could be considered as a natural, cost-effective cancer therapeutic agent, with no side effects, therefore relieving the patient's economic burden.

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## BIOGRAPHY

**Rasha Alhaj** is an inventor. She discovered the substance in honey that inhibits the growth of breast cancer cells. She is founder of "The Amal Initiative", a project to bring healing and hope to cancer patients. In 2015 Rasha received the Afrabia Afro-Arab Youth Award. She has a BSc in Biological Science from UAE University, an MSc in Chemical Pathology, from the University of Putra, Malaysia, and an MRes in Bioengineering from Imperial College London.