Nutritional properties of Bissap: health claims and evidence

The Bissap plant (*Hibiscus sabdariffa*) has been used in traditional medicine for many centuries, its vivid flowers and calyces often steeped to make a striking red tea.

In fact there are a huge number of claims made for Bissap’s therapeutic benefits, from Ayurvedic menstrual remedies\(^1\) to hangover cures and treatments for cancer.

As well as its popular appeal as a beverage, hibiscus is clearly regarded as a health drink in many cultures. In the countries of origin, the flowers have been, or still are used as an antiseptic, aphrodisiac, astringent, chologogue, demulcent, digestive, diuretic, emollient, laxative, cooler, sedative, and tonic! In Chinese folk medicine they are used to treat liver disorders and high blood pressure. In East Africa, the infused hibiscus drink called "Sudan tea", is taken to relieve coughs.\(^2\)

However many of these anecdotal benefits have not been subjected to clinical study. Fortunately, extracts of Hibiscus (Bissap) have also been the subject of hundreds of scientific studies, some of these attracting attention from the British media. This summary covers those health claims which are supported in some way by scientific studies or trials.

**Lowering Blood Pressure**

High blood pressure (hypertension) afflicts one in three people in Britain. It also increases risks of heart disease by three fold and causes 60 per cent of strokes. In Northern Nigeria Hibiscus drink is traditionally used as a treatment for this condition.\(^3\)

Scientific studies indicate that Bissap can indeed lower blood pressure\(^4\)\(^5\) and inhibit the angiotension converting enzymes (ACE) that play a part in raising blood pressure\(^6\)\(^7\). A study

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1. [www.alandiashram.org/school/school_html/articles/menstrual.html](http://www.alandiashram.org/school/school_html/articles/menstrual.html)


from Tufts University, Boston generated considerable media coverage when it suggested that daily consumption of hibiscus tea (in an amount readily incorporated into the diet), lowers BP in pre- and mildly hypertensive adults and may prove an effective component of the dietary changes recommended for people with these conditions.

Another biomedical study showed that giving 500mls of Hibiscus tea to patients with mild to moderate hypertension was as effective as giving them the anti-hypertensive drug Captopril.

Cholesterol lowering and antioxidant properties

Oxidation in the human body produces chemicals called ‘free radicals’. These chemicals have been linked to diseases such as heart and liver disease, and cancer. Coronary heart disease is the biggest killer in the UK and death rates from coronary heart disease in the U.K. are among the highest in the world. Liver disease is rising dramatically in Britain and over the next ten to 20 years will overtake cardiovascular diseases as the single biggest cause of death, ministers said last year.

Antioxidants are chemical compounds that can bind to ‘free radicals’ preventing them from damaging healthy cells.


8 Hibiscus sabdariffa L. tea (tisane) lowers blood pressure in prehypertensive and mildly hypertensive adults. McKay DL, Chen CY, Saltzman E, Blumberg JB. Antioxidants Research Laboratory; Energy Metabolism Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA Abstract: Philippine Journal of Nutrition Feb;140(2):298-303. Epub 2009 Dec 16

9 Biomedical research by the Instituto Mexicano del Seguro Social compared the antihypertensive effectiveness and tolerability of a standardized extract from Hibiscus sabdariffa with captopril, an ACE inhibitor medication used in the treatment of high blood pressure. The results showed that H. sabdariffa was able to decrease the systolic blood pressure (BP) from 139.05 to 123.73mm Hg and the diastolic BP from 90.81 to 79.52mm Hg. The hibiscus had a similar hypotensive effect, tolerability and antihypertensive effectiveness as the captopril. Effectiveness and tolerability of a standardized extract from Hibiscus sabdariffa in patients with mild to moderate hypertension: a controlled and randomized clinical trial. Herrera-Arellano A, Flores-Romero S, Chávez-Soto MA, Tortoriello J. Centro de Investigación Biomédica del Sur, Instituto Mexicano del Seguro Social, Argentina 1 Xochitepec, 62790 Morelos, Mexico. Abstract: Phytomedicine: international journal of phytotherapy and phytopharmacology 2004 Jul;11(5):375-82.
Studies from around the world indicate that Bissap exhibits strong antioxidant activity and that this is linked to the pigments (anthocyanins), which give the plant its vivid red colour. To assess its antioxidant properties one study compared its activity with that of BHA (Butylated Hydroxyanisole), an anti-oxidant widely used in fat-containing foods (for its antioxidant properties), and also, beta-carotene. The results showed that the Hibiscus extract had stronger antioxidant activity than both BHA and beta-carotene.

Scientists from Chung Shan University in Taiwan have stated that the antioxidant properties of the compounds found in the flower may reduce cholesterol levels and the risk of heart disease. Their research showed that anthocyanins, flavonoids and polyphenolic compounds contained in the flower can prevent the oxidation of the ‘bad’ LDL cholesterol associated with heart disease. Commenting in the *Journal of the Science of Food and Agriculture* Researcher Chau-Jong Wang commented that this study shows that hibiscus flower extract is as effective as red wine and tea.

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15 Protective influence of Hibiscus sabdariffa, an edible medicinal plant, on tissue lipid peroxidation and antioxidant status in hyperammonemic rats M. Mohamed Essa, P. Subramanian, T. Manivasagam, K.B. Dakshayani, R.Sivaperumal, S. Subash Department of Biochemistry, Faculty of Sciences, Annamalai University, India *African Journal of Traditional, Complementary and Alternative Medicines Vol. 3, No. 3, 2006, pp. 10-21


18 ibid

compounds in reducing cholesterol (and lipid build-up) in the blood serum of lab animals. Other studies have also highlighted hibiscus' inhibiting effect on LDL cholesterol. 20 21 22 23 24 25 26

**Nutritional properties**

Julia Morton, Research Professor of Biology and Director of the Morton Collectanea, University of Miami (a research and information center devoted to economic botany) states that nutritionists analysed the calyces of rosville (another name for Bissap) sold in Guatemalan markets and found them to be high in calcium, niacin, riboflavin and iron. 27 The analysis can be found in the book *Fruits of Warm Climates* 28

**Weight Loss**

A number of articles and websites recommend drinking hibiscus tea to assist in weight loss. 29

Studies show that Hibiscus tea contains an enzyme inhibitor which blocks production of amylase - an enzyme that breaks down complex sugars and starches. 30 31 32 So it may be

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27 See [http://www.hort.purdue.edu/newcrop/morton/roselle.html](http://www.hort.purdue.edu/newcrop/morton/roselle.html) for Food Value Per 100 g of Edible Portion


possible that drinking a cup of hibiscus tea after meals (as part of a controlled weight loss programme) could reduce the absorption of dietary carbohydrates and assist in weight loss. A study by the University of Veracruz, Mexico 33 using Hibiscus extract concluded that components of the extract used in the experiment could be considered as possible anti-obesity agents.

**Relieving the painful symptoms of cystitis**

Around one in six women get cystitis each year. (Children and men can also get cystitis though it is less common). To reduce the painful symptoms of Cystitis and UTIs, many experts and GPs now advise sufferers to incorporate cranberry and other foodstuffs with a high-antioxidant level into their diet. A study 34 conducted by the Cystitis and Overactive Bladder Foundation (COB) found a hibiscus drink already on the market to be more effective than cranberry juice in relieving the condition.

The COB trial was conducted amongst its members and compared the effects of the hibiscus infused juice on the symptoms of cystitis to the effects of cranberry juice. 59% per cent of participants in the study felt regular consumption of the hibiscus based health drink was more effective than cranberry. More than three quarters (77%) said that they would use it again with 86% recommending it to a friend.

**Fibre, Food & Beauty for Poverty Reduction** is a joint project of PAN Germany, PAN UK, OBEPAB from Benin and Enda Pronat from Senegal. It aims to raise awareness about the many different food crops grown by organic cotton farmers in Africa and help them to find better marketing options for these, in local or export markets.

The project is funded by Europe Aid Co-operation Office and TRAID.

For more info on the Fibre Food & Beauty project, visit:

http://www.pan-uk.org/food/fibre-food-beauty

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31 *Hibiscus acid as an inhibitor of starch digestion in the Caco-2 cell model system.* Hansawadi C, Kawabata J, Kasai T *Biosci Biotechnol Biochem.* 2001;65:2087–2089. Published:ibid


34 [www.talkmenopause.com/webdocs/features/be_kind_to_your_kidneys_with_simply_hibi.php](http://www.talkmenopause.com/webdocs/features/be_kind_to_your_kidneys_with_simply_hibi.php)

35 The Cystitis and Overactive Bladder Foundation (COB) is a leading UK charity supporting research into all forms of cystitis and overactive bladder. The foundation provides resources for patients and health professionals. The study was conducted in association with Ibis Organics

36 Composed of 85% of hibiscus infused water and 15% fruit extract.