

Introduction

Although India has a lot of solar energy potential yet use of solar energy has not gained popularity. Thus, there is a need for evidence based research to support the said benefits of solar energy. It can go a long way leading to a win-win situation for India. An aspect which needs an immediate action is food processing. A large amount of post harvest losses is due to transportation. Newer equipments for post harvest processing if can be installed at village level where food is produced can considerably bring down the losses. Solar cooking is the simplest, safest, most convenient way of processing food without consuming fuels or heating up the kitchen. It has been stressed solar cooking results in nutritious and tasty food. There is a need for evidence based studies to take into consideration nutrient losses using various methods of cooking versus solar cooking. One of the main reasons of food consumption is taste. Data is needed to support the above stated claim that solar cooking improves palatability. Overall acceptability of a recipe depends on its taste, flavor, texture appearance etc. This paper presents the effect of solar food processing on various sensory attributes and nutrient composition of some common Indian recipes

Objective

To estimate the nutrient composition of solar cooked foods and foods cooked using conventional cooking methods

To evaluate the sensory attributes of solar cooked foods and conventionally cooked foods

To compare solar cooking and conventional cooking methods regarding nutrient profile and sensory attributes

Methodology

Selection of conventional recipes using various food groups

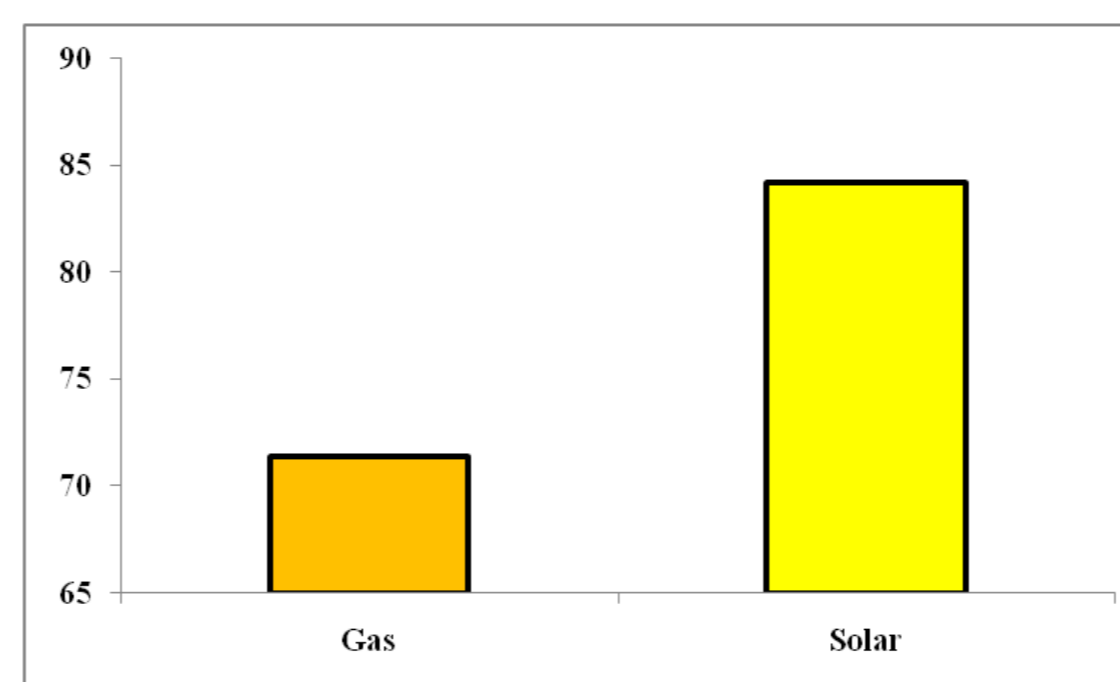
Cooking using solar and conventional gas stove method

Chemical Analysis

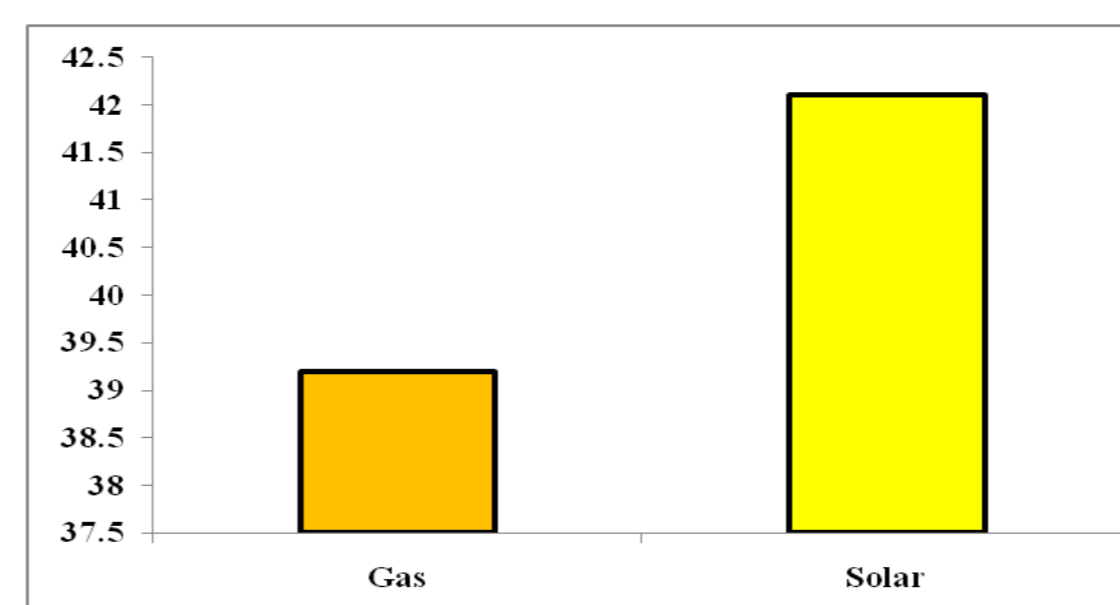
Sensory Attributes

Results and Discussion

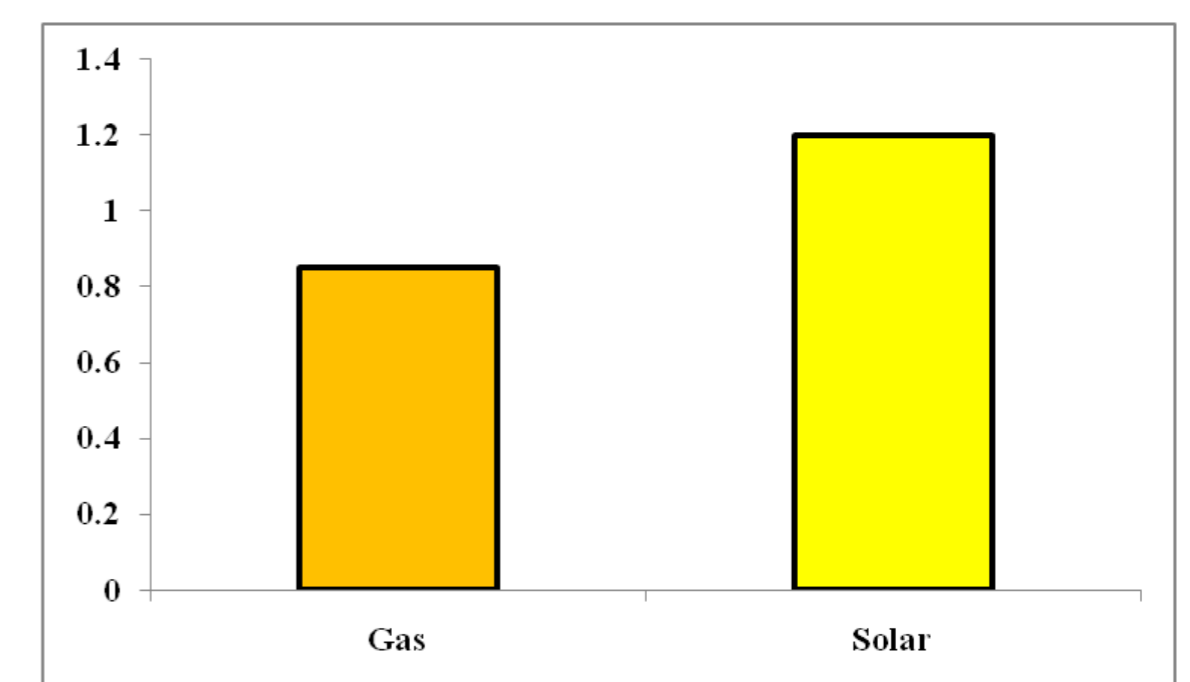
Beta Carotene content in Dal Palak Cooked using Solar cooker v/s Gas stove/ 100 gm of sample



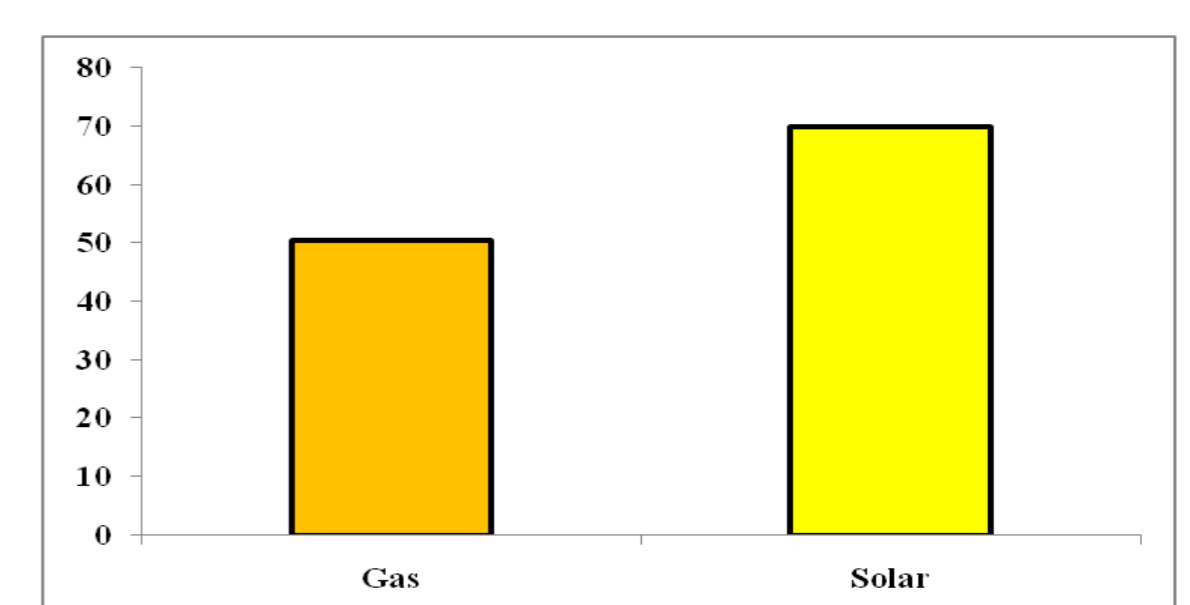
Beta Carotene content in mixed vegetable soup Cooked using Solar cooker v/s Gas stove/ 100 gm of sample



Beta Carotene content in mixed vegetable Khichdi Cooked using Solar cooker v/s Gas stove/ 100 gm of sample



Calcium content in Mixed Vegetable Soup Cooked using Solar cooker v/s Gas stove/ 100 gm of sample



Present study shows higher beta carotene content in all the solar cooked recipes. Mixed vegetable soup showed high amounts of calcium in solar cooked foods.

Several studies on cereals, pulses and millets show that retention of carbohydrates, proteins, iron and calcium was higher when they were solar cooked (Srivastava and Nahar,2013) Only one out of ten recipes retained ash content. Amount of ascorbic acid went down while acid value increased in various recipes on slow prolonged heating (Vaid B and Dave N,2008)

Ascorbic acid and Vitamin B2 (Riboflavin) are affected by cooking. Solar cooking retains these nutrients to a much higher extent as compared to other methods because it is a slow cooking method (Chandrashekhar and Kowsalya, (1997)

All the participants in the study reported that solar box cooked food tasted better with regards to smell, richness of flavor and attractiveness of color (Carpenter et al,1990)

Conclusions

There is a strong need to conduct similar study with recipes using different methods of cooking using common regional recipes. Effect of solar cooking needs to be studied further with regard to nutrient profile so as to clearly understand the benefits of the same. A very important parameter to be studied is the anti nutrient profile as it has been well documented that proper cooking leads to a reduction of the same but no data is available for solar cooked foods. Thus, studying the amount of phytates, tannates and oxalates in solar cooked foods will also help in understanding the bio-availability of various nutrients in these recipes as these compounds interfere with the bio-availability of various essential nutrients.

Effect of solar cooking on water soluble vitamins especially B-vitamins need to be investigated as these compounds are affected by heat which has been well documented in conventionally cooked recipes. Along with the nutrient profile various sensory tests should also be conducted on the recipes using hedonic scale, comparison tests like duo trio, paired comparison tests etc.

Variety of recipes need to be studied which use all the food groups as different food groups have different nutrient composition and effect of solar cooker on various nutrients can be established only when all the food groups are studied in details.

References:

1. Srivastava R and Nahar A , 2014: Retention of nutrients of pearl millet using conventional and solar cooking, African journal of food science, Vol 8 (5) pp 216-224
2. Vaid, Bhavana M., 2008, "A Study on Nutrient Profile and Sensory Characteristics of Foods Cooked by Conventional Methods, Microwave Cooking and Solar Cooking", Saurashtra University
3. Chandrasekhar, U. and Kowsalya, S. (1997). Comparative Nutrient Profile And Beta Carotene Retention Of Foods And Recipes Cooked In Solar Cooker As Against Conventional Cooking. Proceedings Of The Third International Conference On Solar Cookers – Use And Technology, 192- 197
4. Carpenter B, Davis L, Moland J and Dahnnya F, 1990 : Analysis of Health aspects, food acceptability and economics benefits of the solar box cooker in Sierra Leone, Souther University and A and M college, Baton Rouge, Louisiana