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FIVE IMPORTANT TIPS TO HELP NOVICE  
ATHLETES IN SPORTS CONFIDENCE

## Turmeric & Coffee

The Suprising Ingredient Generating Short-Pulsed Laser

## EMAIL CARBON FOOTPRINT

A SOURCE FOR GREENHOUSE GASES EMISSIONS

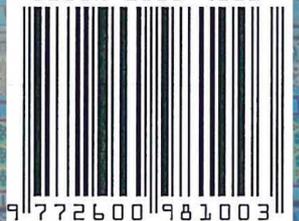
## Creating Happiness

IN WORK AND LIFE IN SOCIETY: A RELIGIOS PERSPECTIVE

Teknik Pengucapan

# BARACK OBAMA

eISSN 2600-9811

9 772600 981003  
Publication Date  
7 November 2023

Bagi mengawal harga gula, ianya memerlukan pendekatan yang komprehensif melibatkan pelbagai aspek, kerjasama antara pelbagai pihak berkepentingan dan pertimbangan kesan jangka pendek dan jangka panjang. Keadaan ekonomi dan pasaran, faktor serantau dan global juga perlu dinilai dengan teliti dalam membangunkan strategi kawalan harga yang berkesan.

Berikut ialah beberapa langkah yang berpotensi membantu dalam mengurus dan menstabilkan harga gula:

Menggalakkan dan menyokong pengeluaran gula dalam negeri bagi membantu mengurangkan pergantungan kepada gula import dan menstabilkan harga;

Menggalakkan penanaman dan pengeluaran pemanis alternatif atau pengganti gula supaya pengguna ada lebih banyak pilihan dan mengurangkan pergantungan kepada gula tradisional;

Mengawal spekulasi dalam pasaran komoditi; Mendidik pengguna tentang kesan penggunaan gula berlebihan yang berpotensi mempengaruhi tingkah laku pengguna; dan Menggalakkan penyelidikan dan pembangunan teknologi dalam menambah baik amalan pertanian, hasil tanaman dan teknik pemprosesan gula yang mampu meningkatkan produktiviti, kecekapan serta mengurangkan kos pengeluaran.

Buat masa ini, sesetengah pasaraya dan kedai runcit menghadkan gula kepada 3 kg setiap pembelian dengan harga lama (pembungkusan lama). Dengan pembungkusan yang baharu nanti, semestinya harga gula yang baharu akan lebih tinggi diperkenalkan. Sudahkah rakyat Malaysia bersedia?

Perlu diambil perhatian bahawa walaupun gula memberikan faedah tertentu, penggunaan berlebihan boleh memberi kesan negatif kepada kesihatan kita. Banyak kajian yang dijalankan mengakui bahawa pengambilan gula tambahan secara berlebihan terutamanya dalam minuman yang diproses dan bergula menyumbang kepada masalah obesiti, diabetes, penyakit jantung dan masalah kesihatan lain. Oleh itu, adalah penting untuk mengambil gula secara sederhana dan memilih sumber yang lebih sihat seperti buah-buahan yang membekalkan gula semulajadi bersama-sama dengan nutrien dan serat penting.



Rujukan : <https://www.msmsugar.com>

# Turmeric and Coffee: The Surprising Ingredients for Generating Short-Pulsed Laser

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Fiber lasers have emerged as a highly versatile and reliable technology, widely used across scientific, medical, and industrial domains. Compared to bulk lasers, they offer superior performance thanks to their compact and easy-to-use design, which eliminates the need for complicated alignment procedures. The pulsed operation of the fiber lasers is particularly beneficial as it allows for a significant boost in instantaneous power, enabling the driving of nonlinear optical processes and facilitating high-resolution, time-resolved applications.

Various methods are available for generating pulsed-laser emission, but passive mode-locking or Q-switching techniques utilising a saturable absorber (SA) are often preferred. The SAs are materials that display an intensity-dependent transmission, allowing for a wide range of pulse parameters to be accessed without needing complex and expensive electrically-driven modulators. There are two types of the SAs, known as the real SAs, which naturally exhibit a nonlinear decrease in absorption as light intensity increases, and the artificial SAs, which use nonlinear effects to simulate the behaviour of a real, saturable absorber.

Real saturable-absorber (SA) materials with one-dimensional (1D), two-dimensional (2D), and three-dimensional (3D) structures have emerged as promising devices exhibiting intensity-dependent absorption since 2000.



These developments have played a significant role in advancing next-generation photonics and optoelectronic technologies. Surprisingly, recent research has shown that environmentally friendly resources, such as coffee and turmeric, can also be used to generate laser light. For instance, Rusdi et al. (2020) have successfully demonstrated passively Q-switched pulse fiber lasers using a saturable absorber made from spent coffee grounds (SCG). The SCG powder has been purified and embedded with polyvinyl alcohol (PVA) to form a thin film, which has then been integrated into three different fiber-laser cavities, including ytterbium-doped (YDFL), erbium-doped (EDFL), and thulium-doped fiber lasers (TDFL), to realise a Q-switching operation. Al-Hiti et al. (2021) have reported a passively Q-switched EDFL at 1566.96 nm by applying an organic material based on turmeric as the SA. The material has also been prepared by embedding turmeric powder into a PVA film.

In summary, the use of natural materials, such as coffee and turmeric as the SA devices in fiber-laser systems, offers several advantages, including eco-friendliness, low cost, and ease of fabrication. These materials have shown an excellent performance in generating pulsed lasers at various wavelengths, making them suitable for various photonic applications. Future research in this area could explore other environmentally friendly materials that can be used as the SA, potentially leading to even more sustainable and cost-effective fiber-laser systems.

#### References:

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## Enhancing Food Safety with SPR Biosensors

Food safety refers to measures and practices taken to ensure that food is free from harmful contaminants and pathogens, making it safe for human consumption. This includes everything from food production, processing, packaging, and storage to the handling and preparation of food by consumers. The goal of food safety is to identify and control potential hazards such as bacteria, viruses, chemicals, and physical hazards at every stage of the food supply chain to minimize the risk of foodborne illness and protect public health.

The utilization of SPR biosensors in food analysis has significant potential for enhancing food safety. These sensors have the capability to detect a broad spectrum of analytes, such as proteins, peptides, antibodies, toxins, and bacteria, with high accuracy and sensitivity. This real-time identification of potential contaminants and pathogens in food samples allows for prompt and appropriate measures to prevent outbreaks of foodborne diseases. For example, SPR biosensors can detect the presence of food allergens such as gluten or peanuts in food products, helping prevent allergic reactions in susceptible individuals. SPR biosensors can also monitor food quality and safety throughout the entire food supply chain, from farm to table. For instance, they can detect pesticide residues in crops, monitor the freshness of seafood, and detect bacterial contamination in meat and dairy products.



BizNewz 2023  
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