

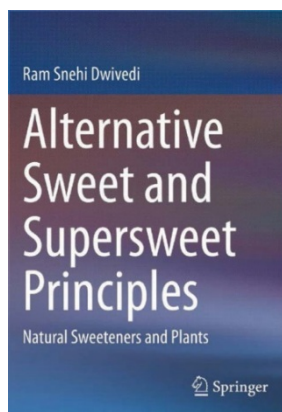
to retrieve hearing, learn to speak and attend a regular school.

CI is the treatment of choice for adults and children with severe to profound sensory neural hearing loss. Despite the technological improvement, complications may arise leading to explantation followed by reimplantation. Every surgery can have complications. Similarly, CI surgery has side effects like vertigo, tinnitus, facial nerve injury, etc.

Recent trends in CI and rehabilitation are worth a reading in this book. Chapter 23 on implant reliability is relevant for counselling patients and implant manufacturers. Latest advances and future horizons are the subject matter of the last chapter. Personalized CI treatment is the future, which could include genetic testing, robotic-assisted CI surgery and electrode insertion along with the addition of pharmaceutical agents. Stem cell-based CI treatment is an emerging research field that would help regenerate lost sensory cells.

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Alternative Sweet and Supersweet Principles: Natural Sweeteners and Plants. Ram Snehi Dwivedi. Springer Nature Singapore Pte Ltd. 2022. 773 pages. Price Amazon Hardcover: ₹ 11,242.00. Kindle edition: ₹ 7476.00.

This unique book depicts the non-saccharide supersweet (NSSS) principle, 30–10,000 times sweeter than sucrose and their sour-

ces, and the non-sacchariferous supersweet (NSSS) plants, of which many are growing wildly and are on the verge of extinction. Both NSSS plants and principles are deterrents to lethal human diseases. Few NSSS plants are the richest source of green energy ethanol, whereas all the NSSS plants have a high potential for carbon sequestration and thereby help in maintaining a good eco-friendly environment.

Ram Snehi Dwivedi is a well-known plant physiologist with 25 years of research experience on natural sweet and supersweet principles and plants. The latest information on 40 natural NSSS principles and their source plants and 19 natural saccharide sweet and source plants is provided in this compilation. A book on alternative natural sweeteners, especially is zero or negligible energy is timely and useful in light of the fast burgeoning population, decreasing cultivable land, the ever-increasing demand for sugar, green ethanol and the well-known risk of sugar consumption. Every year more than 5 million people die due to diabetes and diabetes-associated ailments like cardiovascular diseases, kidney disorders, liver cancer, etc. The use of NSSS principles and plants to avoid this is discussed in this book.

The book is comprised of 18 chapters. The first chapter, i.e. 'Introduction', discusses sweeteners and hedonics, with a general appraisal of sweet and supersweet natural principles and plants, zero-energy nutrition and health limitations, regulatory status of naturally sweet and NSSS principles and plants, scope and future prospects. Chapter 2 deals with the search for sweeteners, their general classification, synthesis and saccharide plants and animal interphases. It also reviews the identification of sweeteners with special reference to religion, e.g. Christianity, Hinduism, Buddhism, Islam, etc. Chapter 3 is on the molecular basis of sweetness, recent concepts, an ideal sweetener, and saccharide and NSSS principles qualifying it. Chapter 4 is about saccharide sweet (SS) principles, classification and structural details of SS sweeteners and plants. Chapter 5 discusses NSSS principles, their general characteristics, outline of synthesis, classification, ecological significance and eco-friendly adherence. Chapters 6–15 are devoted to details about natural NSSS principles, which are chemically

monoterpenoids, diterpenoids, triterpenoids, sesquiterpenoids, dihydrochalcone and flavonoids, dihydroisochoumarin, steroidal saponin and sweet amino acids. Besides, super sweet and test-modifying principles are also proteins, cynarine, gymnemic acid and ziziphin. However sweetness-impairing and test-modifying nature of *Moringa oleifera* (drumstick) seeds are still unknown. Chapter 16 enlists new ideas in the literature on eco-physiological differences between sacchariferous sweet and NSSS plants and principles. Chapter 17 reviews the literature regarding molecular approaches to NSSS plants and principles. The last chapter (18) deals with the commercial production of natural NSSS sweeteners.

Each SS and NSSS principle has been reviewed in detail under the following sections: (I) Physical and chemical characteristics, (II) Molecular and structural formula variabilities, (III) Sweetness, (IV) Biological activities (medicinal utilities with reference lethal diseases), (V) Safety dose and limitations, (VI) Legal status and (VII) Source plants. Each source plant is discussed under (I) Origin and distribution, (II) Etymology, (III) Botanical characteristics supported by B/W photographs, (IV) Propagation and cultivation, (V) Varieties/ecotype/chemotype, (VI) Sweet sink and yield, (VII) Pharmacognosy and pharmacological constituents, (VIII) Medicinal values with special reference to lethal diseases, (IX) Commercial utilities, (X) Culinary use and (XI) Regulatory status.

Exhaustive information on SS and NSSS principles and plants, and references, including studies as recent as 2021, make this book a ready reference for students, researchers, and practitioners in the field of food science, nutrition, ayurveda, chemotaxonomy, naturopathy, biochemistry, plant physiology and plant breeding. It will also be of interest to the industry and alternative sweeteners manufacturers. I compliment the author for his efforts to bring out this comprehensive book.

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