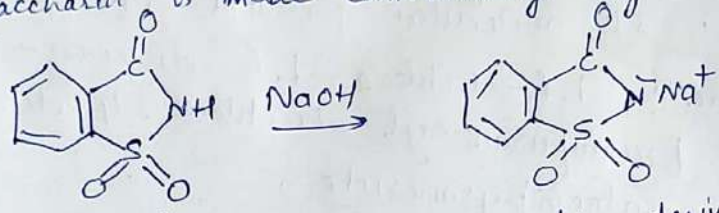
Name of the course – ANSI First Year
Topic – Sweetener
Prepared by – Dr. Chitra yadav
Pages –

Saccharin → It was dicovered by IRA RAMSEN.

Saccharin is made commercially by toluene.



Saccharin — Sodium derivative of saccharin.

Sodium saccharin (benzoic sulfimide) is an artificial sweetener with effectively no food energy. Its molecular formula is $C_7H_5NO_3S$ having melting point 228.8 to 229.7°C. Its appearance is white crystalline solid, it is not very soluble in water (solubility in water 1gm/290 ml) therefore it is employed as the Na or Ca salt which are soluble. It is about 300-400 times as sweet as sucrose but has a bitter or metallic after taste, especially at high concentrations. Saccharin is a heat stable. It does not react chemically with other food ingredients; as such, it stores well. Its IUPAC name is 1,1-dioxo-1,2-benzothiazol-3-one.

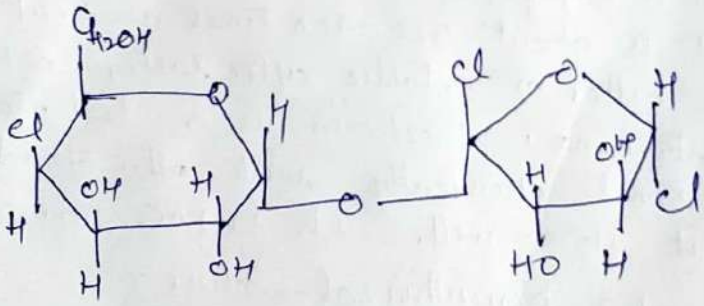
Saccharin is used to sweeten products such as drinks, candies, cookies and medicines.

contn-2.

SUCRALOSE → Sucralose is a disaccharide derivative consisting of 4-chloro-4-deoxy-alpha-D-galactopyranose and 1,6-dichloro-1,6-dideoxy-beta-D-fructofuranose units linked by a glycosidic bond. It has a role as an environmental contaminant, and sweetening agent. It is approximately 320 to 1000 times sweeter than sucrose. [It is approximately 600 times sweeter than sucrose but containing calories). It is being marked with "SPLENDA" as brand name. Its molecular formula $C_{12}H_{19}Cl_3O_8$.

IUPAC Name: 1,6-dichloro-1,6-dideoxy-β-D-fructofuranosyl-4-chloro-4-deoxy-α-D-galactopyranoside.

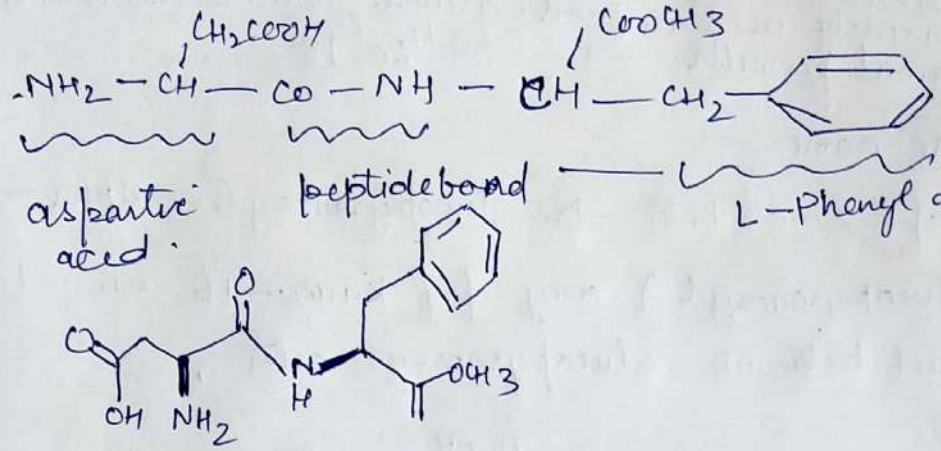
It is white crystalline powder, odourless, freely soluble in water, methanol and ethanol. Its melting point is 125°C, it is thermostable during cooking and baking, it is used in beverages, frozen desserts, chewing gums, baked food.



Structure of sucralose.

contn-3

Aspartame → It is an artificial non-saccharide sweetener, 200 times sweeter than sucrose; structurally aspartame is the methyl ester of a dipeptide of two amino acids that occur naturally in proteins — aspartic acid and phenyl alanine and it is sold under the name of Nutrasweet



Asp-Phe-OMe.

IUPAC Name — Methyl L-α-aspartyl-L-phenyl alaninate.

chemical formula — $C_{14}H_{18}N_2O_5$

M.P — 246-247°C

It is white crystalline compound. which may be obtained anhydrous or more usually as a half hydrate. It is sparingly soluble in water it has an ability to blend well with other food flavours.

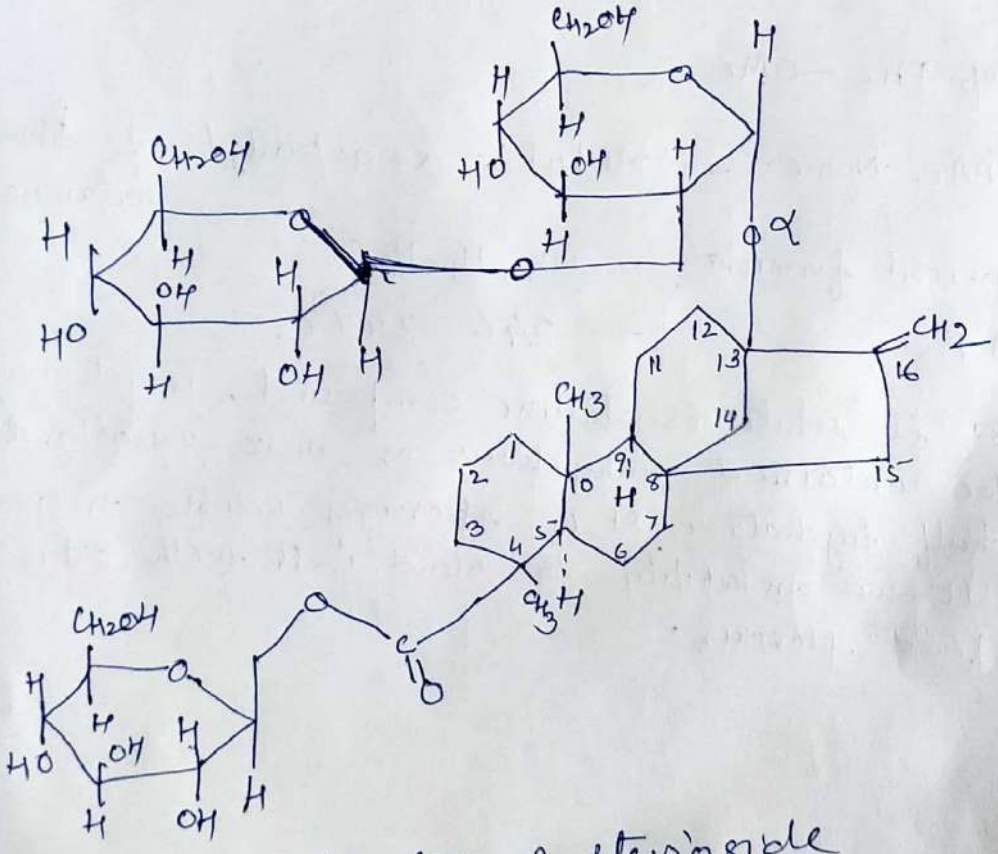
Contn—4

Stevioside → It is extracted from the plant Stevia rebaudiana commonly known as sweet leaf, sugar leaf. This plant is found on the High Northern plateau of Paraguay [South America]. On solvent extraction of leaves obtained a pure crystalline glycoside (Stevioside). It is 300 times as sweet as sucrose by weight bases. It is off white powder. It is widely used in food, drinks, medicines and common chemicals.

Chemical formula — $C_{38}H_{60}O_{18}$

IUPAC name —

13-[(2-O-beta-D-glucopyranosyl-alpha-D-glucopyranosyl) oxy] [kaur-16-en-18-oic acid beta-D-glucopyranosyl ester].



Structure of stevioside.