**Sugar Substitutes**

1. **Saccharine** (300x sweeter than sucrose): *Sweet-n-Low, Sugar Twin*
   - Discovered in 1879, produced from grapes.
   - Keeps its sweet flavor during heating and can be used in baked goods.

   **Risks?**
   Has been shown to cause bladder cancer in mice at very high doses. FDA proposed to ban it in 1977, but a warning was provided instead. It appears to be safe at normal doses.

   - ADI (acceptable daily intake) = NA
     - FDA suggests limiting it to 1000 mg/day for adults. 500 mg/day for children.

     **NOTE:** Avg. intake is 50 mg/day. No more than 30 mg is added to any one product.

2. **Aspartame** (200x sweeter than sucrose): *NutraSweet, Equal*
   - Has 4 kcal/gm, but so little is used that it’s virtually calorie free.
   - Discovered in 1965; approved for use in 1981.
   - Consists of two amino acids: phenylalanine and aspartic acid.
   - When heated, loses its sweetness. Best added to foods after cooking.

   **Risks?**
   People with PKU should avoid it. Has been reported to cause headaches and dizziness in some individuals. Earlier studies with cancer may have been flawed. Appears safe at normal doses.

   - ADI = 50 mg/kg body weight
     - (For a 132 lb. person, that’s like 80 packets of Equal or 15 diet soft drinks).

     **NOTE:** Avg. intake is only 6% this amount.

3. **Acesulfame K+** (200x sweeter than sucrose): *Sunett, Sweet One*
   - Cannot be broken down in body, eliminated unchanged in the urine.
• Heat stable and can be used in baking. When used alone, can be bitter, so often combined with other sweeteners

**Risks?**

Appears to be safe at normal doses; however, the safety tests conducted in the 1970s were of mediocre quality and two rat studies were suggestive of cancer.

• ADI = 15 mg/kg body weight.

4. Sucralose (600x sweeter than sucrose): **Splenda**

• Made by chemically reacting sucrose with chlorine (three -OH groups are replaced with -Cl).
• Not well digested/ absorbed; most is eliminated unchanged in the urine.
• Stable in both cooked and cold foods.

**Risks?**

None reported at this time.

• ADI = 5 mg/kg body weight per day for all ages.

5. Stevia & Rebiana: (100 & 200x sweeter than sucrose, respectively): **SweetLeaf (Stevia) / Truvia, PureVia (Rebiana)**

• The rebiana (rebaudioside-A) extract of stevia was granted “Generally Recognized As Safe” (GRAS) status by the FDA in December, 2008. Stevia is not on the GRAS list and is marketed as a dietary supplement.
• Stevia leaves have been used for centuries in South America to sweeten beverages.

**Risks?**

More testing is needed. Some studies show that stevioside, an extract of stevia, causes mutations and DNA breakage in lab rats. The rebaudioside-A extract appears to be safe at normal doses.

*NOTE: Some research indicates that artificial sweeteners increase sugar cravings. Monitor your individual tolerance if you choose to consume these substances.*