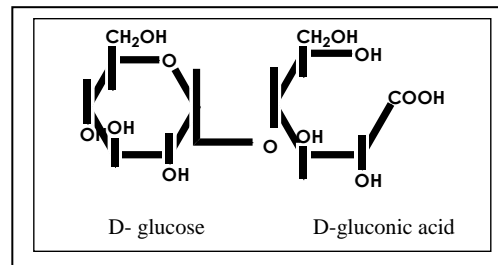


## Technical Information Bulletin

### Maltobionic Acid

Maltobionic acid is a new polyhydroxy BIONIC acid consisting of a sugar acid (gluconic acid) attached to another sugar (glucose). The bionic acids are part of the AHA family of ingredients, and are technically polyhydroxy AHAs (notice the multiple OH groups on the molecule). They are called bionic acids because two sugars are bound together. One of the prominent features of the bionic/sugar acids is their water binding and hydrating potential, due to the polyhydroxy structure. They are also very gentle to skin.



#### Ingredient Claims:

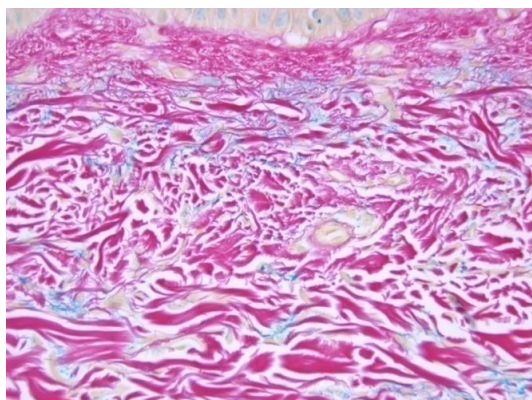
1. Plant derived (from maltose)
2. Polyhydroxy bionic acid
3. Sugar acid
4. A bionic alpha-hydroxy acid (AHA)

#### Cosmetic Claims:

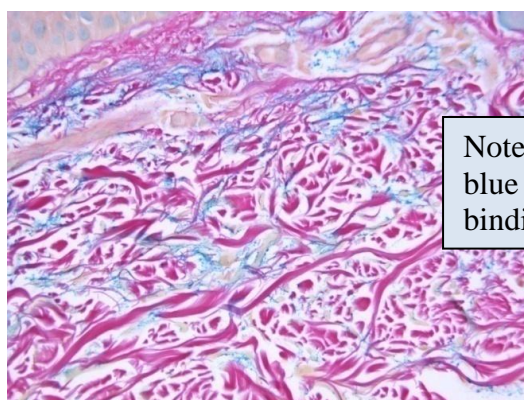
1. Water binding/humectant, attracts and binds water forming a natural gel matrix
  - ✓ Highly moisturizing, hydrating
  - ✓ Lightly occlusive due to gel matrix formation
2. Extensive anti-aging benefits, *similar to AHAs without stinging and irritation*
  - ✓ Reduces appearance of fine lines, wrinkles, pore size, sallowness, and mottled pigmentation
  - ✓ Improves laxity, roughness, and skin clarity
  - ✓ Increases skin elasticity and firmness
  - ✓ Builds skin volume and plumpness/fullness to smooth skin wrinkles from the inside out
  - ✓ Increases skin matrix components, nurturing skin health
  - ✓ Reverses signs of photoaging (histology)
3. Pigment evening effects: reduces UV-stimulated melanin synthesis in melanocyte cells
  - ✓ Helps prevent brown spots/pigment following sun exposure, improves clarity, evens skin tone

4. Chelating agent, anti-oxidant, MMP inhibitor
  - ✓ Natural anti-oxidant to help prevent cellular damage from free radicals
  - ✓ Traps oxidation promoting metals in skin
  - ✓ Preserves dermal matrix (collagen, GAGs) by reducing activity of destructive MMP enzymes
  - ✓ Both prevents (anti-oxidant) and corrects signs of photoaging
5. Rated nonstinging and nonirritating; no increase in redness, stinging or burning
  - ✓ Gentle, nonirritating and nonstinging

**Maltobionic Acid (8%) increases water binding GAGs (hyaluronic acid) in skin to plump and firm, and smooth wrinkles from the inside out:**



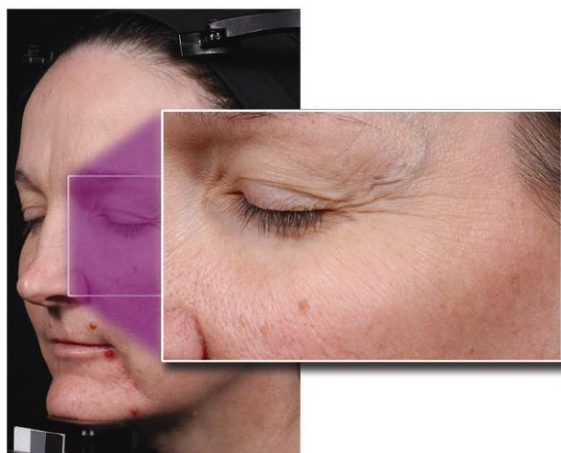
Untreated Control



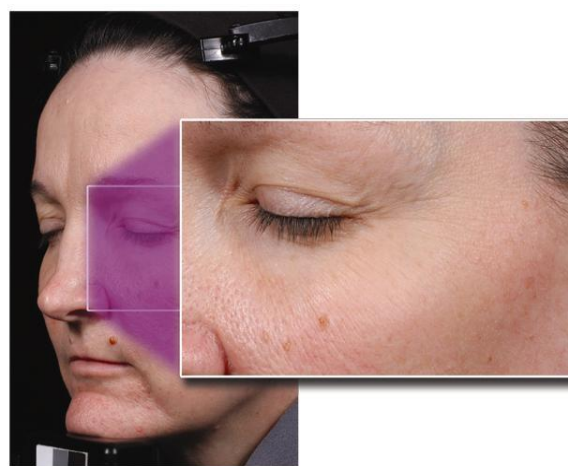
8% maltobionic acid cream, week 12

Note increased density of blue stain representing water binding GAGs in skin

**Maltobionic Acid (8%) reduces wrinkling and smoothes skin texture:**



Before



After 12 weeks, twice daily use of 8% maltobionic acid

## **Patent Coverage of Maltobionic Acid:**

- US Patent 6,740,327; 6,335,023 B1; expires 1/19/20: Oligosaccharide aldonic acids and their topical use
- EP Patent 1 227 820 B1; expires 6/28/20; includes 19 countries

## **References:**

1. Brouda I, Edison BL, Weinkauff RL, Green BA. Maltobionic acid, a powerful yet gentle skincare ingredient with multiple benefits to protect and reverse the visible signs of aging. *Am Acad of Dermatol Poster Exhibit*: Chicago, August 2010.
2. Green BA, Van Scott EJ, Yu RJ. Clinical uses of hydroxyacids. In: Draelos ZD ed. *Cosmetic Dermatology: Products and Procedures, 1<sup>st</sup> edn*. West Sussex, UK: Wiley-Blackwell 2010; 327-334.
3. Green BA, Edison BL, Wildnauer RH. Maltobionic acid, a plant-derived bionic acid for topical anti-aging. *Am Acad of Dermatol* 2006;54(3):AB37.