

# UT Intensive™ Chewables



Support for urinary tract health in a chewable tablet

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**UT Intensive™ Chewables** are a powerful blend of whole fruit cranberry extract and high dose D-mannose designed to impair the adhesion of pathogenic UTI-causing bacteria to the lining of the urinary tract. Presented in great-tasting, chewable, orange flavored tablets, this product makes for easy patient compliance and can be used as an adjunct to direct antibacterial agents to promote a healthy urinary tract.

## Cranberry (*Vaccinium macrocarpon*)

Cranberry is one of the most widely studied, time-tested, natural remedies for supporting urinary tract health and helping to reduce incidence of urinary tract infections (UTIs). Cranberry extracts contain proanthocyanidins (PACs), polyphenols which are polymers of various lengths. Some of the low molecular weight PACs are absorbed in the blood and end up in the bladder medium, where they impair bacterial adhesion to the bladder wall and impair bacterial cohesiveness, which may help reduce bacterial ability to penetrate the epithelial cells and evade immune defenses. The larger molecular weight PACs remain in the gut and are thought to impair pathogenic actions of *E. coli*-type bacteria in the intestinal tract. This may be particularly beneficial for women, because it is believed that bladder contamination with *E. coli* may be caused by stool *E. coli* due to anatomical proximity.

Unlike most commercially available cranberry products, which are made from juice or contain individual isolated phytochemicals, the cranberry extract in UT Intensive™ Chewables are made from the whole fruit—juice, skins, flesh, and seeds—and therefore contains the full complement of PACs, organic acids, fatty acids and phenolics. In order to match the PAC content of the highly concentrated whole fruit cranberry extract in two UT Intensive™ Chewables (one serving) one would need to consume 1½ cups fresh/frozen cranberries, 1 oz. of sweetened, dried cranberries, or 10 oz. of 27% cranberry juice cocktail – all of which (with the possible exception of fresh/frozen) would present an unfavorable glycemic impact, and potentially feed bacteria, particularly if consumed on a regular basis.

It had previously been believed that the efficacy of cranberry against UTIs was due to it acidifying the urine. It has since been shown that cranberry consumption does not affect urinary pH, and that its mechanism of action is inhibition of bacterial adhesion to cell walls.<sup>1-3</sup> It does this by binding to structures on *E. coli* that would otherwise bind to epithelial cells lining the urinary tract. This prevents bacteria from forming a biofilm and subsequently creating an infection. Although cranberry PACs have been widely studied, published research shows that with regard to urinary tract health, whole cranberry matrices outperform PAC-rich fractions, and that synergies in the whole fruit provide more potent anti-adhesion benefits than the PAC formulations alone. This may be why some studies employing only cranberry juice have not shown benefit in reducing risk for recurrent UTIs.<sup>4,5</sup> Studies have even noted a high dropout rate of participants due to the undesirability of consuming cranberry juice over long periods of time, citing specifically the incidence of weight gain as well as cranberry juice-drug interactions.<sup>6,7</sup>

Studies employing whole fruit powder (peel, seeds, pulp) have been more favorable.<sup>8</sup> In one trial evaluating the effects of whole cranberry fruit powder on recurrent UTIs in women, compared to placebo, women who took 500 mg of the powder daily for 6 months had significantly fewer UTIs, with a longer time to the first incidence of UTI from baseline.<sup>8</sup> Published and unpublished ex vivo data from researchers at Rutgers University evaluating the anti-adhesion activity (AAA) of different cranberry products in human urine show that 500 mg of whole cranberry matrices containing approximately 2 mg of PACs provide synergistic benefits for UT health and just as much AAA as PAC-rich extracts that provide 33 mg PACs, as well as 300 ml of cranberry juice cocktail providing 38 mg of PACs. The AAA of whole cranberry extract increases slowly over time compared to isolated cranberry compounds, but the overall effect lasts longer, with a peak at 24 hours and effects continuing for as long as 36 hours after ingestion.<sup>9,10</sup>

In a double-blind RCT evaluating the efficacy of cranberry powder as a prophylactic against recurrent UTIs in women, a daily dose of 500 mg of whole cranberry powder for 180 days reduced recurrence by 50% compared to the placebo group.<sup>11</sup> A separate double-blind RCT to determine the effect of different doses of whole cranberry powder on bacteriuria and pyuria in women determined that after a 90-day follow up period, 500 mg and 1000 mg of the powder resulted in reductions of urinary *E. coli* infection of 36% and 65%, respectively, compared to no significant reduction in an untreated control group.<sup>12</sup>

## Supplement Facts

Serving Size 2 tablets

Servings Per Container 15

Amount Per Serving	% Daily Value
D-Mannose	2 g *
Cranberry ( <i>Vaccinium macrocarpon</i> )(fruit)	500 mg *

\*Daily Value not established.

**Other Ingredients:** Xylitol, modified cellulose, vegetable stearate, natural flavor, citric acid, silicon dioxide, luo han guo.



An added benefit of cranberry in the form of a chewable tablet is that its polyphenols have been found to impair the detrimental effects of oral bacteria on periodontal disease. The chewable delivery form increases the contact time for cranberry actives and gum tissue, thus allowing similar mechanisms of action for cranberry actives to take place in the mouth as they do in the bladder.

## D-Mannose

Mannose is a type of sugar found in fruits and vegetables such as cranberries, apples, grapes, currants, and blueberries. The naturally occurring isomer, D-mannose, is similar in structure to certain urinary tract receptors that bind *E. coli* bacteria. This property causes the bacteria to bind to D-mannose instead of urinary epithelial cells, thereby allowing them to be flushed out with the urine, with an end result of reducing bacterial counts. For this reason, this product may be used in conjunction with antibiotic medication as a way to eradicate the bacterial count more effectively, thus reducing the chance of leaving bacterial organisms to remain, proliferate, and become antibiotic-resistant.

Although D-mannose is a sugar, it is not metabolized in energy pathways. It enters the bloodstream from the upper GI tract, where it is primarily filtered through the kidneys and routed to the bladder. In the urinary tract, mannose coats some of the projections on bacterial surfaces, loosening their hold on the urinary tract lining and drawing them away from the tissue, akin to a magnet. Mannose also coats free-floating bacteria, helping to prevent their clinging to the urinary tract lining and allowing them to be easily excreted in the urine. Mannose is eliminated from the body instead of impacting calorie intake or metabolism, and does not interfere with blood sugar regulation.

*E. coli* strains adhere to the normally sterile human uroepithelium using long, hairy surface organelles called type 1 pili, whose tips contain a binding molecule, FimH adhesin. A small percentage of adhering bacteria may invade bladder cells, replicate, and mature into dense, biofilm-like formations. This is believed to be the primary cause of recurrent UTIs. FimH adhesin has a high affinity for D-mannose, particularly compared to other sugars, such as fructose, sucrose, and turanose,<sup>13</sup> and D-mannose possesses a structural similarity to urinary tract epithelial cells that may help it serve as an antagonist to UTIs by blocking bacterial adhesion and invasion.<sup>14</sup>

This was well explained in a paper in *The British Association of Urological Surgeons*: “In vitro experiments have shown that D-mannose binds and blocks FimH adhesin, which is positioned at the tip of the type 1 fimbria of enteric bacteria. During bacterial colonization, FimH binds to carbohydrate-containing glycoprotein receptors on the epithelium of the urinary tract. As it is similar in structure to the binding site of urothelial glycoprotein receptors, D-mannose acts as a competitive inhibitor of bacterial adherence; in sufficient concentration in urine D-mannose causes saturation of FimH adhesins and prevents the bacteria from binding to urothelial receptors.”<sup>15</sup>

An RCT comparing the prophylactic effects of 2 g daily of D-mannose, 50 mg daily of the antibiotic Nitrofurantoin, and no prophylactic intervention in women with a history of recurrent UTIs, 32% experienced a recurrent UTI. Of those, 14% were in the D-mannose group compared to 20% in the Nitrofurantoin group, and 61% in the no prophylaxis group, showing that D-mannose was at least as effective, if not more effective, than the antibiotic.<sup>16</sup>

### How to Use

- As a dietary supplement, chew two tablets per day, or as directed by a health care practitioner.

## Clinical Considerations

- This product may be used in conjunction with Designs for Health's UT Synergy™. UT Synergy™ is recommended as part of a maintenance protocol for patients with recurrent UTIs, while UT Intensive™ Chewables are intended for acute infections. (UT Intensive™ may be used at half the dose as part of a maintenance regimen for individuals with recurrent UTIs.) For severe infections, use additional UT Intensive™ Chewables.
- As UT Intensive™ Chewables have no direct antibacterial activity, consider using this product as an adjunct to DFH formulations with specific antibacterial effects, such as Allicillin™, Oil of Oregano, Berb-Evail™, or Berberine Synergy™.

*For a list of references cited in this document, please visit:*

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