BODY DEHYDRATION / REHYDRATION

(Updated 26 May 2005)

Dehydration can be caused by a number of conditions. Some of the most common would include prolonged cases of exertion, diarrhea, or vomiting. An inadequate supply of drinking water would soon dehydrate the body. Once dehydrated, the body requires more than just water. If there is a medical facility available, it should be used to determine any unapparent cause of dehydration and give proper treatment. The following information might be helpful if no other help is available.

Re hydration is the process of restoring the body to a normal state of liquid/electrolyte balance. Instead of going into the complex body chemistry system, only the basic body elements needed that are readily available will be listed. The three types of oral electrolyte formulas that will be covered are:

1. **Re hydration Formula: a solution that will quickly restore body salts, water, and energy.**
2. **Electrolyte Maintenance Formula: a solution that will maintain body salts, water, and energy.**
3. **Exertion Formula: a solution that will replace body salts, water, and energy lost during highly physical activities.**

   These formulas vary in their salt and calorie ratios.

General: One source says to use 1 gram of salt for every liter of water. Commercial and international formulas given have been converted to grams per liter and then the main elements have been converted to Tablespoons or teaspoons per liter using common ingredients.

The main concerns are potassium, sodium, sugars, and some kind of flavoring. Morton Lite Salt is used as the source of potassium. Table salt is used for the source of additional sodium needed. Karo Light Corn Syrup (only) is used for the glucose portion of the sugars needed (other sugars can be used for any additional sweetening or calories wanted). The chlorides are contained in the salt compounds used. Citrates are contained in citrus type flavorings when they happen to be used.

These solutions were meant to be mixed up fresh and are not sterile so they may not keep long. The solutions will taste better if refrigerated for a few hours. Use ReaLemon, Hawaiian Punch Concentrate, or Kool-Aid etc. for flavorings. Use sugar or honey etc. for any additional sweetening that may be necessary.

International Oral Rehydration Formula

- **Drinking water** **1 liter**
- **Sodium chloride** **3.5 g**
- **Potassium chloride** **1.5 g**
- **Tri Sodium Citrate** **2.9 g**
- **Glucose** **20 g**

Approximate Common Formula

- **Drinking water** **1 liter**
- **Table Salt** **1/4 tsp**
- **Morton Lite Salt** **1/2 tsp**
- **Karo Light Corn Syrup** **2 Tbs** **(120calories)**

Commercial Rehydration Formula

- **Drinking Water** **1 liter**
- **Sodium** **1.7 g**
- **Potassium** **0.8 g**
- **Chloride** **2.3 g**
- **Citrate** **5.7 g**
- **Dextrose** **25 g** **(100 calories)**

Approximate Common Formula

- **Drinking Water** **1 liter**
- **Table Salt** **3/8 tsp**
- **Morton Lite Salt** **1/2 tsp**
- **Karo Light Corn Syrup** **2 Tbs** **(120 calories)**

Pediatric Commercial Oral Electrolyte Maintenance Formula

- **Drinking water** **1 liter**
- **Sodium** **1 g**
- **Potassium** **0.78 g**
- **Chloride** **1.24 g**
- **Citrate** **5.67 g**
- **Dextrose** **25 g** **(100 calories)**

Approximate Common Formula

- **Drinking Water** **1 liter**
- **Table Salt** **1/8 tsp**
- **Morton Lite Salt** **1/2 tsp**
- **Karo Light Corn Syrup** **2 Tbs** **(120 calories)**

Exertion Type Gator - Power - Sport Formula

- **Drinking Water** **1 liter**
- **Sodium** **230 mg**
- **Potassium** **230 mg**
- **Sugars** **80 g** **(290 calories)**

Approximate Common Formula

- **Drinking Water** **1 liter**
- **Table Salt** **1 pinch** **(1/100 tsp)**
- **Morton Lite Salt** **1/6 tsp**
- **Karo Light Corn Syrup** **2 Tbs** **(120 calories)**
- **Additional Sugar** **3 Tbs** **(180 calories)**

Lightly Lemon Flavored Exertion Formula

- **Drinking Water** **1 liter**
- **Table Salt** **1/16 tsp**
- **Morton Lite Salt** **1/8 tsp**
- **Karo Light Corn Syrup** **4 Tbs** **(240 calories)**
- **Sugar** **1/2 Tbs** **(23 calories)**
- **Kool-Aid Lemonade** **3/8 tsp** **(unsweetened powder)**

If Morton Lite Salt is not available, you can substitute 1/8 heaping tsp of table salt for every 1/2 tsp of Morton Lite Salt that has been deleted. This will replace the lost sodium but you will have no potassium.

You will notice that there are different forms of sugars (glucose, dextrose, high fructose corn syrup, and sucrose) used in the different formulas. Karo Light Corn Syrup contains high fructose corn syrup which is about 44% glucose and 56% fructose.

The body processes different sugars in different ways. The easiest sugar for the body to use is glucose. If the body is in poor condition to process food, then forms of glucose would be best to use. The body's ability to regulate sugar levels and salt levels should always be considered such as problems caused by diabetes etc.

If you are making an exertion formula to get extra energy, you may observe something interesting if you use high percentages of glucose for energy for extended periods of time. The body may become lazy and not readily convert other forms of sugar for use and crave the glucose mix instead. It may require several days for an otherwise normally functioning body to switch back over to it's normal mode of readily converting food into energy. To avoid this glucose effect, delete the Karo and substitute sugar or some other sweetener in it's place.

Each formula gives total sugar calories contained. You can adjust the amounts of the different forms of sugars to get the effect that you want for each specific need according to what ingredients are available at the time.

Change the sugar content to suit your calorie and taste needs according to any flavoring that you may add. Don't make flavorings too corrosive. You may choose to put in less salts but I would not recommend adding more salt than is listed in the formulas.

The following information may be helpful in adjusting sugars according to your needs and ingredient availability:

▪ **White Sugar**	**1 Tbs**	**12 g**	**46 calories**
▪ **Raw Sugar**	**1 Tbs**	**14 g**	**14 calories**
▪ **Brown Sugar**	**1 Tbs**	**14 g**	**52 calories**
▪ **Karo Light**	**1 Tbs**	**15 g**	**60 calories**
▪ **Honey**	**1 Tbs**	**21 g**	**64 calories**
▪ **Dextrose**		**25 g**	**100 calories**
▪ **Jam**	**1 Tbs**	**20 g**	**54 calories**
▪ **Maple Syrup**		**20 g**	**50 calories**
▪ **Light Molasses**	**1 Tbs**	**20 g**	**50 calories**