**Therapy with PABA**

- Constituent of folic acid;
- Helps utilization of pantothenic acid (B-5);
- Topical application protects against skin cancer;
- Topically applied sunscreen — prevents & soothes pain & damage of sunburn;
- Said to soothe pain of burns even better than vitamin E;
- Useful for treating some parasitic diseases, including Rocky Mountain spotted fever;
- Treatment of vitiligo, depigmentation of skin;
- Certain schizophrenia-like behaviours discontinued on administration of 2 g of PABA/day;
- May prevent amines from forming hallucinogens; used in schizophrenia (2,000 mg/day);
- With folic acid, B-5 & biotin, PABA restores colour to grey & greying hair (animals);
- Used to treat Peyronie’s disease, a fibrous penis condition in post-middle aged men;
- Used in lupus, apparently with some success;

**PANGAMIC ACID (DMG)**

**General:** water-soluble; dimethyl glycine (DMG)

- Need in human nutrition has not been established; dimethyl glycine is an intermediate in normal metabolism;
- Despite ambiguity of its nutritional status, pangamic acid is accepted as a valuable dietary factor; France, Japan, Germany, Spain & Russia use pangamic acid as an essential nutrient, with adult recommended allowances ranging from 25 - 50 mg/day;
- **History:** patented in 1949; introduced to natural foods trade in 1978;

**Nutrition**

- **Sources:** apricot pit; brewer’s yeast, brown rice, whole grain, pumpkin & sesame seeds; made in body by normal metabolism;
- **Supplement:** calcium pangamate;
- **Absorption** from small intestine; circulates freely in the body;
- **Storage:** minute amounts in liver & kidneys;
- **Excretion:** through kidneys, bowels, sweat;

**Functions of DMG**

- Can be converted into sarcosine & glycine by donating methyl groups;
- May have function in donating methyl groups for biological reactions;
- Poorly understood, but claimed to increase blood tissue oxygenation, improve performance & prevent insufficiency of tissue oxygen (hypoxia), that produces lactic acid build-up & fatigue;
- Reports claim that pangamic acid is involved in regulation of lipid & carbohydrate metabolism & in nervous system functions;
Quantities

- **Measurement:** milligrams;
- **Optimum:** (SONA) average ranges not yet established;
- **Individual** optimum must be established for each individual;
- **Minimum:** (DRI) not set; not an essential nutrient for humans;
- **Deficiency:** not noted;
- **Toxicity:** not observed; doses 50,000x greater than the recommended 25 to 50 mg/day produce no ill effects; contaminants found in some preparations may be mutagenic;

Therapy with pangamic acid

- Role of pangamic acid in human physiology still under investigation;
- Empirical observations from the USSR indicate that pangamic acid can be useful to treat alcoholism, senility, diabetes, heart disease, high blood pressure, allergies, neuritis, hepatitis, autism, schizophrenia & mild brain damage;
- 50 mg, twice/day of B-15 has helped chronic alcoholics lose their craving for alcohol;
- Pangamic acid has been researched for treating autism & learning disorders in U.S. children, with positive results; Dr. Bernard Rimland (Institute for Child Behaviour Research) in San Diego claims that it helps correct a wide range of behaviour disturbances;
- Athletes taking pangamic acid claim greater endurance; research finds lower lactic acid levels in skeletal & cardiac muscles (elevated lactic acid results from anaerobic respiration & produces fatigue);
- May help hyper-cholesterolemia, asthma, atherosclerosis, emphysema, angina, circulatory problems &; according to Nobel Laureate Dr. Otto Warburg, may help prevent cancer by avoiding anaerobic fermentation in cells.