MB: SAFETY AND DOSING

The main side effect of MB is a blue discoloration of the urine. Rarely, some blue discoloration of the skin might be noticed when an *extended administration of highly-dosed MB* has occurred. Nevertheless, both effects are completely reversible in hours to a few days as the MB is eliminated out of the body. At very high doses of MB, some of the hemoglobin in the blood can be converted into methemoglobin, which is an abnormal state where MB is the treatment of choice when given at a lower dose. Even higher doses can result in greater toxic side effects, although higher doses can still be warranted for some critically ill patients who are not responding to other measures, as in terminal septic shock. Also, in patients with depression who are on drugs known as serotonin reuptake inhibitors (SSRIs)**, the addition of MB is not advisable, as some of these patients can develop a potentially life-threatening development known as serotonin syndrome. However, MB is an effective anti-depressant by itself at low doses.**

Because they are highly effective antioxidants, both MB and vitamin C have been cited to rarely precipitate red blood cell hemolysis in patients with glucose-6-phosphate dehydrogenase (G6PD) **deficiency. Nevertheless, closely monitored administration of these agents in such patients typically avoids such hemolytic problems. In fact, when the G6PD-deficient patient presents with methemoglobinemia, a condition for which MB is typically the indicated treatment, properly dosed vitamin C can resolve the condition without using MB. Of note, G6PD deficiency resulting in hemolytic anemia from MB is very rare. In African children with malaria, MB therapy was shown to be very safe even when G6PD deficiency was present, as was the case with all 24 deficient children in one study. Another study on 74 healthy but G6PD deficient adult men demonstrated no hemolysis when given MB along with chloroquine.**

Generally intravenous dosing is not necessary except for the critically ill patient, as in advanced hypotensive shock. There is no standard, fixed regimen of MB recommended in such situations. Boluses of 2 mg/kg of MB can be given, often followed by infusions of various duration depending on the clinical status and response of the patient. Such infusions are often in the range of 0.5 mg MB/kg/hour over an extended period, but as much as 4 mg MB/kg can be infused over an hour. An effective infusion spanning 120 hours has been reported. Others report that infusions can range from 0.25 to 2 mg MB/kg/hour.

For less critical patients, as well as for outpatients, oral MB dosing can range from 10 mg to 50 mg, and that dosage can be taken from one to three times daily, adjusted up or down in dose size and frequency depending on clinical response. Even higher doses can be comfortably used for limited times. 200 mg daily to stabilize COVID patients that are not yet critically ill is a very reasonable dose. A reasonable regular supplementation dose can range from 5 to 15 mg daily for general good health if there is no targeted symptom or medical condition.

As a practical point regarding regular supplementation, a dose of 5 to 15 mg of 1% MB solution (0.5 to 1.5 milliliters) **can be added to a small amount of water. A teaspoon of ascorbic acid powder** (not sodium ascorbate) **can then be added. After sitting for 15 minutes or less, the solution will completely clear with just a slight residual blue tint. This can then be quickly consumed with little staining of the tongue that readily occurs with the MB solution alone. Regardless, the staining resolves quickly. But without the added ascorbic acid, it is best to just put the MB straight into something like tomato juice and then drink that.**

Methylene blue is not a nutrient. While having some important similarities with vitamin C, there are differences, including a narrower tolerance limit and higher risk safety profile.