ELSEVIER

Blood 142 (2023) 5234–5235

The 65th ASH Annual Meeting Abstracts

ONLINE PUBLICATION ONLY

102.IRON HOMEOSTASIS AND BIOLOGY

Iron Uptake from Ferric Maltol in Patients with Iron Deficiency with or without Anemia: *Post Hoc* analysis of a Multicenter, Open-Label, Randomized, Phase 1 Clinical Study

Stefanie Howaldt, MD[1], *Michael Cody, MD*[2], *Jacqueline A Mitchell, MA, DPhil*[3]

[1] HaFCED e.K., Hamburg, Germany
[2] Shield Therapeutics, Dallas, TX
[3] Shield Therapeutics, Newcastle upon Tyne, United Kingdom

Introduction: Iron deficiency is the most common nutritional disorder in humans, accounting for more than half of the estimated 1.76 billion cases of anemia worldwide (https://www.healthdata.org/). Anemia is a serious health problem, but, even without anemia, people with iron deficiency may experience fatigue, headaches, restless legs, and other physical and cognitive impairments, severely limiting their daily activities and quality of life. Patients may require long-term iron replacement therapy to replenish iron stores. Traditional oral iron salts are often associated with intolerable gastrointestinal toxicity and poor absorption. Ferric maltol is a European Medicines Agency- and U.S. Food and Drug Administration-approved oral iron formulation that was uniquely designed to improve gastrointestinal absorption, resulting in increased iron uptake while minimizing the risk of intestinal damage or dysbiosis. In a Phase 1 study in adults with inflammatory bowel disease and iron deficiency, ferric maltol increased iron uptake and storage over time at twice-daily doses of 30-90 mg (Bokemeyer B et al. *Eur J Drug Metab Pharmacokinet* 2017;42:229-238). We assessed iron measures following ferric maltol treatment in patients with iron deficiency with or without anemia.
Methods: In *post hoc* analyses of data from 17 of the Phase 1 study participants (4 men, 13 women), who received twice-daily ferric maltol 30 or 60 mg, we compared total iron and transferrin saturation (TSAT) maximum concentration (C_{max}) and area under the curve up to 6 hours (AUC_{6h}) on Days 1 and 8 in subgroups with and without anemia. Data are reported as arithmetic means (standard deviation).
Results: Four of the 17 patients (all female) had iron deficiency with anemia. Median (range) baseline hemoglobin levels were 107.5 (100-114) g/L in the subgroup with anemia and 135 (127-159) g/L in the subgroup without anemia. Total serum iron and TSAT values on Days 1 and 8 were similar between the subgroups with and without anemia (Table).
Conclusions: These data demonstrate similar iron uptake from ferric maltol in patients with iron deficiency with or without anemia. Given the adverse impact of iron deficiency, even without anemia, iron-replacement therapy should be considered in anyone with an indication of low iron availability (e.g., ferritin <30 ng/mL with any TSAT value or ferritin <100 ng/mL with TSAT <20%), regardless of hemoglobin level. At the approved dose of 30 mg twice daily, ferric maltol is an effective, well tolerated, and convenient to take long-term iron-replacement therapy.

Disclosures Cody: *Shield Therapeutics:* Current Employment. **Mitchell:** *Shield Tx (UK):* Current Employment; *PharmaKrysto Ltd:* Current equity holder in private company.

Table. Total Iron and TSAT Values in Patients with Iron Deficiency With or Without Anemia Treated with Oral Ferric Maltol 30 or 60 mg Twice Daily for 8 Days

Iron Parameter	Day 1 (first dose)		Day 8 (steady state)	
	With Anemia (n=4)	Without Anemia (n=13)	With Anemia (n=4)	Without Anemia (n=12*)
Total Iron				
C_{max}, µmol/L	49 (12)	38 (18)	31 (20)	36 (19)
AUC_{8h}, h*µmol/L	230 (49)	193 (84)	140 (90)	165 (87)
TSAT				
C_{max}, %	65 (10)	56 (25)	45 (27)	53 (27)
AUC_{8h}, h*%	307 (41)	283 (121)	203 (122)	248 (129)

Values are arithmetic means (standard deviation).

*One patient missed all samples for total iron and TSAT on Day 8; therefore, no pharmacokinetics analysis could be conducted for this patient.

Figure 1

https://doi.org/10.1182/blood-2023-185768