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Blood Compatibility in Cats

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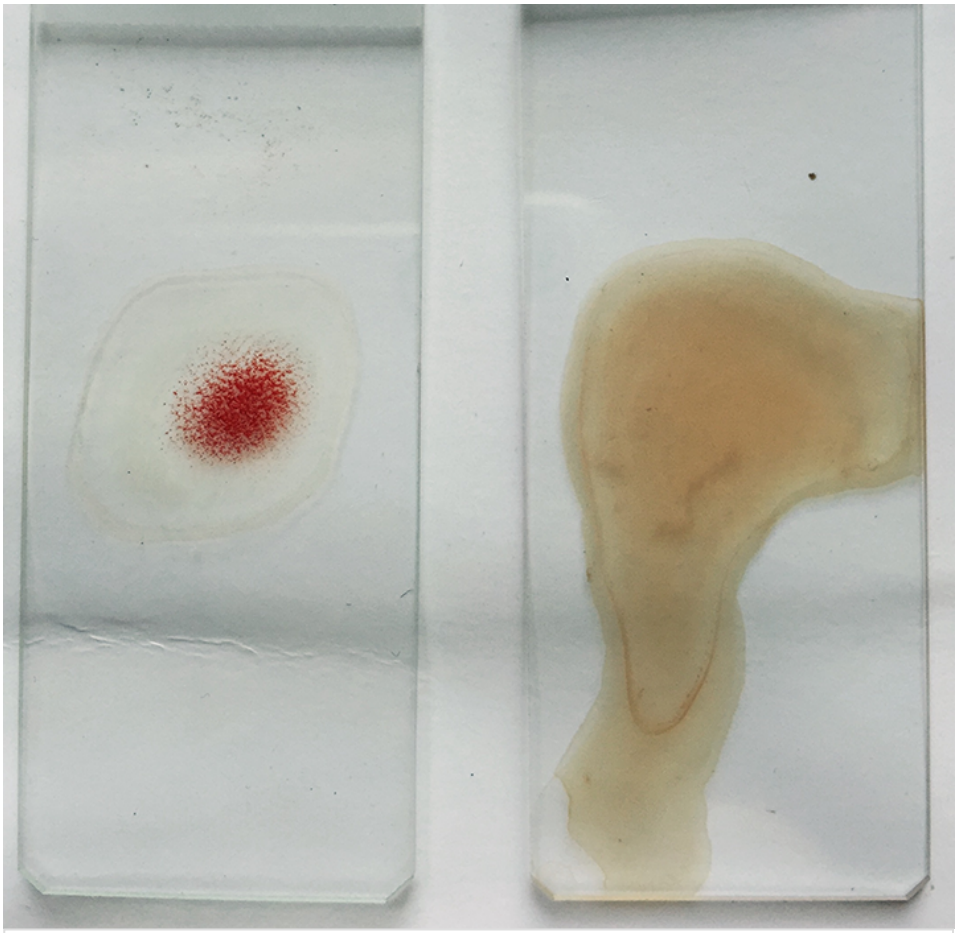
In the Literature

Goy-Thollot I, Nectoux A, Guidetti M, et al. Detection of naturally occurring alloantibody by an in-clinic antiglobulin-enhanced and standard crossmatch gel column test in non-transfused domestic shorthair cats. *J Vet Intern Med*. 2019;33(2):588-595.

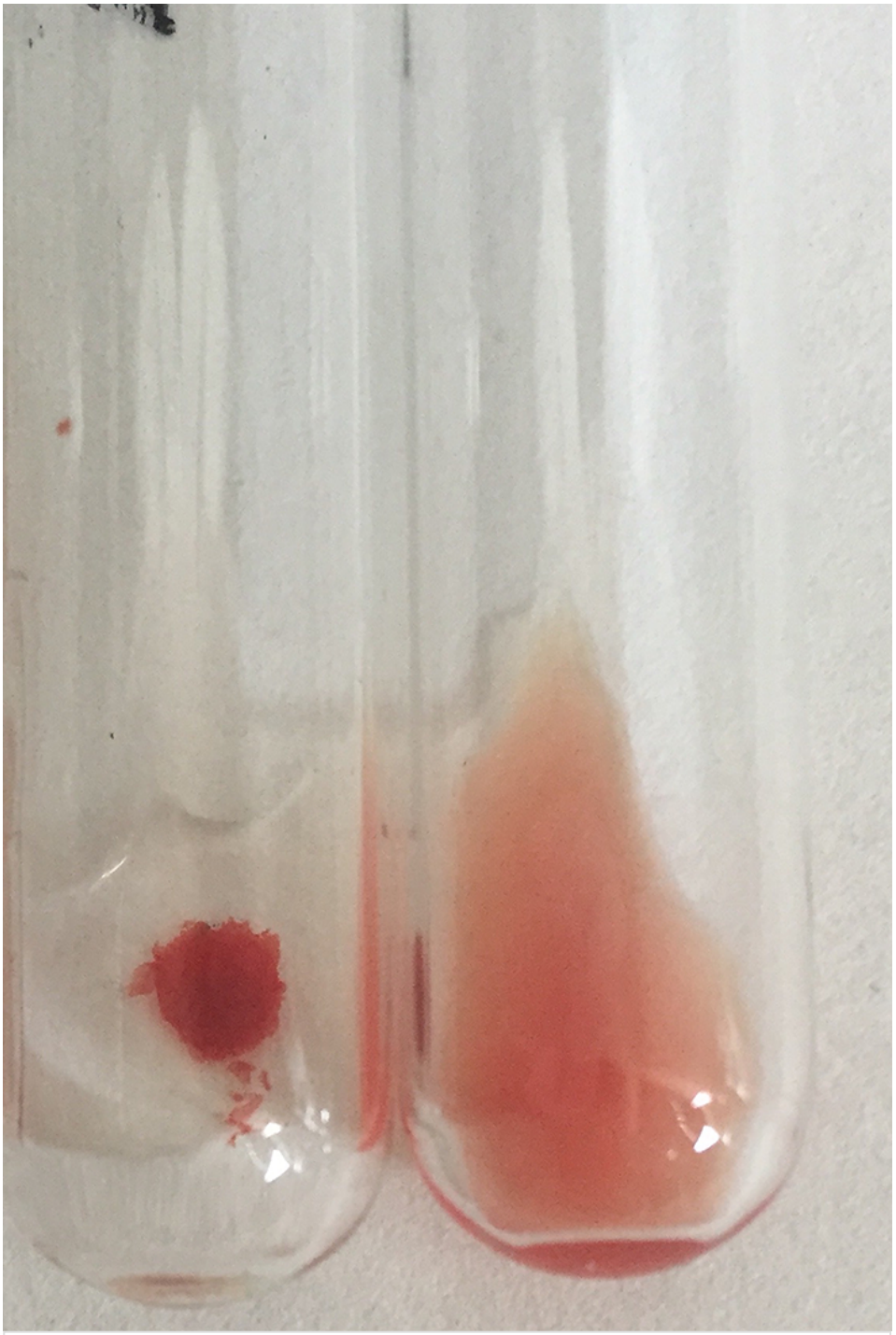
FROM THE PAGE ...

Domestic cats have one major blood group system, the AB system, which consists of types A, B, and AB. Most type A cats have no or weak naturally occurring anti-B antibodies (ie, alloantibodies), all type B cats have strong anti-A alloantibodies, and type AB cats have no alloantibodies.[1] Typing for the presence of A and B antigens is recommended for blood transfusion recipients, blood donors, and mates before breeding to ensure an effective transfusion, reduce acute hemolytic transfusion reactions, and prevent neonatal isoerythrolysis in type B lactating queens with type A kittens.[2] In addition to the feline AB system, the Mik RBC antigen has been proposed to be an additional feline blood group system. Alloantibodies may exist in some Mik-negative cats,[3] but no commercial tests are available to blood type for this group.

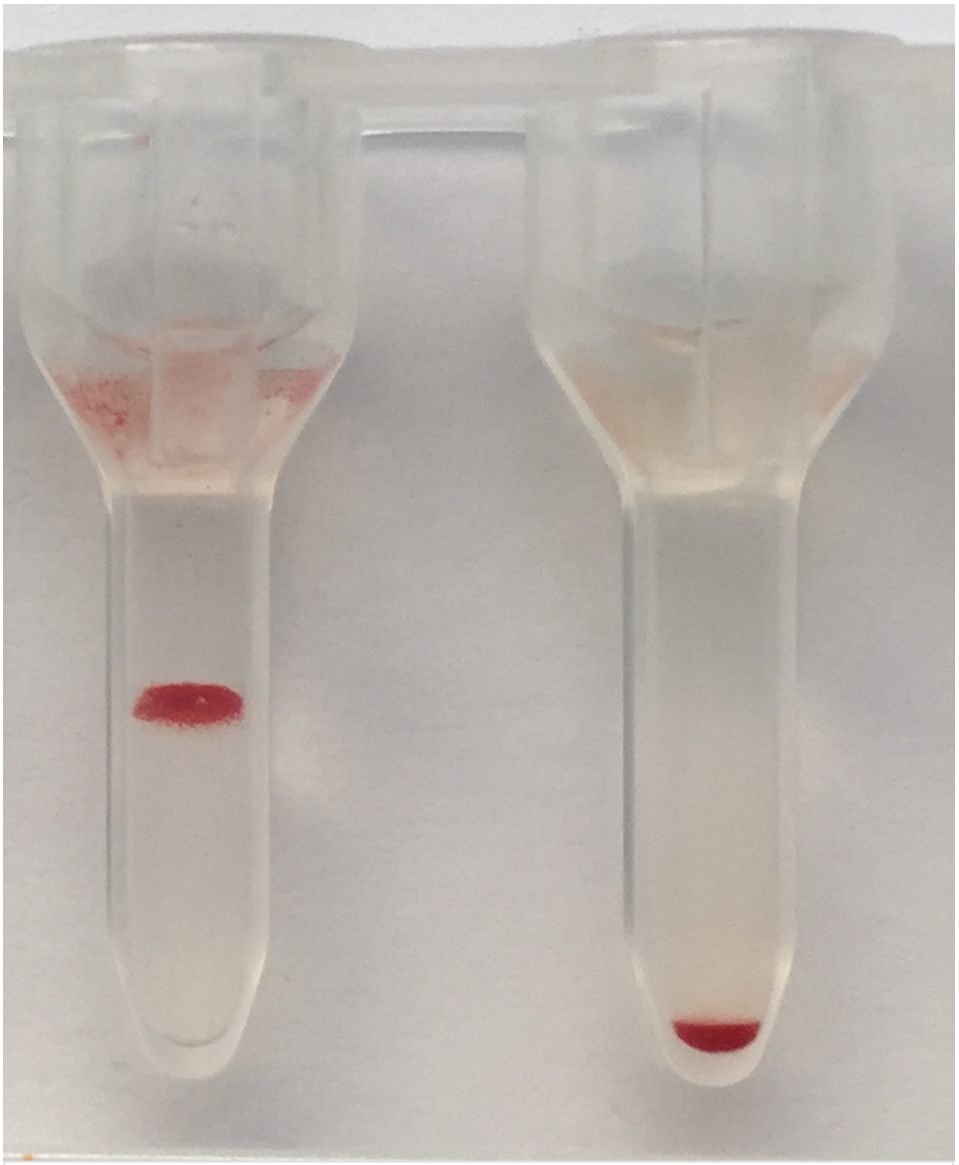
In addition to typing for the presence of A and B antigens before a first transfusion, crossmatching is also recommended to detect the presence of allo-antibodies outside the AB system (eg, anti-Mik). Methods for identifying naturally occurring antibodies in cats include slide (**Figure 1**), tube (**Figure 2**), gel (eg, antiglobulin-enhanced gel, column card gel; **Figure 3**), and immuno-chromatographic techniques.



▲ **FIGURE 1** Slide crossmatching technique. An incompatible crossmatching result (**left**) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (**right**) with no evident agglutination (ie, absence of alloantibodies)



▲ **FIGURE 2** Tube crossmatching technique. An incompatible crossmatching result (**left**) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (**right**) with no evident agglutination (ie, absence of alloantibodies)



▲ **FIGURE 3** Column card gel crossmatching technique. An incompatible crossmatching result (**left**) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (**right**) with no evident agglutination (ie, absence of alloantibodies)

This study detected naturally occurring antibodies via a new, in-practice, antiglobulin-enhanced gel tube crossmatching test and compared the results with a laboratory gel column card method to establish crossmatching recommendations in cats that have not previously received a transfusion. There was good agreement between the 2 crossmatching test results, but the anti-globulin-enhanced crossmatching kit revealed additional incompatibilities outside the AB system. The associated RBC antigens and clinical importance of these and other alloantibodies remain to be determined.

… TO YOUR PATIENTS

Key pearls to put into practice:

1 Type A cats have no or weak anti-B alloantibodies, whereas all type B cats have strong anti-A alloantibodies and type AB cats have no naturally occurring alloantibodies. However, naturally occurring antibodies could be found in some Mik-negative cats.

2 Naturally occurring antibodies outside the AB blood group system can be identified by performing crossmatching, and an antiglobulin-enhanced gel tube crossmatching test can reveal incompatibilities not detected by usual methods (eg, column card gel technique).

3 Based on this study and prior publications on alloantibodies, it is recommended that cats be crossmatched and typed for AB compatibility prior to their first transfusion.

SUGGESTED READING

- Abrams-Ogg ACG. Feline recipient screening. In: Yagi K, Holowaychuk MK, eds. *Manual of Veterinary Transfusion Medicine and Blood Banking*. Ames, IA: Wiley Blackwell; 2016:129-154.

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2. Bücheler J, Giger U. Alloantibodies against A and B blood types in cats. *Vet Immunol Immunopathol*. 1993;38(3-4):283-295.
3. Weinstein NM, Blais MC, Harris K, Oakley DA, Aronson LR, Giger U. A newly recognized blood group in domestic shorthair cats: the Mik red cell antigen. *J Vet Intern Med*. 2007;21(2):287-292.

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For global readers, a calculator to convert laboratory values, dosages, and other measurements to SI units can be found here.