Z Rechtsmed (1985) 95:159–161

Zeitschrift für
Rechtsmedizin

Failure to Detect Antihuman-Immunoglobulinallotype-active Antibodies in Diagnostic Sera Directed Against Some Enterobacteria

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Summary. Diagnostic sera to determine antigenic properties of bacteria were tested to clarify the question whether these sera also contain antibodies being active against human immunoglobulin allotypes. Sera directed against various strains of *Escherichia coli, Salmonella,* and *Shigella* were found to be negative for anti-Ig-allotype activity.

Key words: Immunoglobulin allotypes – Diagnostic sera, directed against enterobacteria

Zusammenfassung. Kommerzielle Testseren zur Bestimmung von Antigeneigenschaften einiger Bakterien wurden untersucht, um die Frage zu klären, ob diese Seren auch Antikörperaktivität gegen menschliche Immunglobulinallotypen zeigen.

Die Seren, die gegen Stämme von *Escherichia coli, Salmonella* und *Shigella* gerichtet sind, zeigten keine Anti-Ig-Allotyp-Aktivität.

Schlüsselwörter: Immunglobulinallotypen – Antikörperaktivität, Testseren zur Bestimmung von Bakterienantigeneigenschaften

In 1981, Sagan [5] reported on the existence of so-called "naturally occurring antibodies" to human immunoglobulin allotypes in sera of cattle. These findings were confirmed by Kirst [3] in 1982 and by Henke et al. [1] in 1983.

Using bacteria as antigenic stimuli, immunization experiments were carried out by Luczkiewicz-Mulczykowa et al. [4], which revealed that the immunized rabbits developed antibodies cross-reacting with human Ig-allotypes. Additionally, Henke et al. [2] were able to demonstrate that strains of *E. coli* may inhibit both Gm and Km typing reagents.

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These results gave rise for the question whether also microbiologic typing reagents to determine antigenic properties of some Enterobacteria contain antibodies directed against human Ig-allotypes.

This paper aims at reporting on these studies.

Material and Methods

Human red cells (blood group 0, D+) were coated with incomplete anti-D with known Gm or Km property as it is used to type either Gm or Km allotypes. Success of coating was controlled by application of a Coombs reagent in a dilution of up to 1:32. Red blood cells were coated with anti-DG1m(1), anti-DG1m(2), anti-DG1m(3), anti-DG3m(10), anti-DG3m(21), and anti-DKm(1), respectively.

Test sera to identify pathogenic strains of *Escherichia coli* were examined for the co-occurrence of anti-human-Ig-allotype activity. The commercially available reagents are listed in Table 1.

Specificity	Batch no.
1. Anti-0 25	215014 A
2. Anti-0 26	215115 A
3. Anti-0 44	215217 A
4. Anti-0 55	B215314 A
5. Anti-0 78	215418 B
6. Anti-0 86	215513 A
7. Anti-0 111	A215614 A
8. Anti-0 114	215715 A
9. Anti-0 119	215813 A
10. Anti-0 124	215915 A
11. Anti-0 125	215015 A
12. Anti-0 126	216114 A
13. Anti-0 127	216216 A
14. Anti-0 128	216319 A
15. Anti-0K-(B) polyvalent I	A210124 D
16. Anti-0K-(B) polyvalent II	A210226 D
17. Anti-0 25 K 11 (L)	211019 A
18. Anti-0 44 K 74 (L)	211221 A

Table 1. Commercial coli test reagents (Behring-Werke, Marburg, FRG)

Specificity	Batch no.
1. Anti-Sh. dysenteriae, type 1	246414 A
2. Anti-Sh. flexneri, polyvalent	245118 A
3. Anti-Sh. boydii, types 1–7	245016 A
4. Anti-Sh. sonnei, flat and smooth	246115 A
5. Anti-Sh. dysenteriae, type 2	246313 A
6. Anti-Sh. dysenteriae, type 3–7	245217 A

Table 2. Commercial Shigella test reagents (Behring-Werke, Marburg, FRG)

Table 3. Commercial *Salmonella* test reagents (Behring-Werke, Marburg, FRG)

Specificity	Batch no.
1. Polyvalent, Groups A–E4	220826 F
2. Polyvalent, Groups F–60	229722 A
3. Polyvalent, Groups 61–65	229621 A
4. Anti-0 2	228016 B
5. Anti-0 3, 10, 15	227917 A
6. Anti-0 4, 5	227720 A
7. Anti-0 6, 7, 8	227520 A
8. Anti-0 9	

Test sera to identify strains of *Shigella spec.* were examined as listed in Table 2.
Sera to identify *Salmonella* strains were tested as listed in Table 3.[1]

Results and Dicussion

The microbiologic typing reagents as they are listed above failed to show any reactivity with coated erythrocytes. As can be learnt from literature cited, sera of animals immunized by bacteria may cross-react with human Ig-allotypes. In contrast to that, commercially available microbiologic typing reagents obviously reveal to be highly specific, indicating that they do not possess anti-human-Ig-allotype activity. These experiments cannot rule out the possibility that this result is either due to a favorable selection of the rabbits to be immunized or to industrial processing (e.g., absorption!) of the sera concerned.

References

1. Henke J, Birkner P, de Lange G, Basler M (1983) Erfahrungen bei der Gm-Bestimmung mit Anti-Gm-Seren von Rindern. 10. Internationale Tagung der Gesellschaft für forensische Blutgruppenkunde, München, S 245–250
2. Henke J, Boes C, Driesel AJ, Schweitzer H, Sagan Z (1985) Zur Frage einer möglichen Partialantigengemeinschaft zwischen der menschlichen Ig-Allotypstruktur und ubiquitären Keimen; untersucht am Beispiel von *Escherichia coli.* Z Rechtsmed 95:97–103
3. Kirst R (1982) Ein neuer menschlicher Gm-Reaktionstyp, dargestellt mit einem Rinderserum. Acta Biol Med Germ 41,4:K17–K18
4. Luczkiewicz-Mulczykowa A, Schlesinger D, Wlodara H (1977) γ-Globulin-like antigens in bacteria. Arch Immunol Ther Exp (Warsz) 25:317–321
5. Sagan Z (1981) Existence of the natural antibody against human gammaglobulin in bovine sera. Arch Immun Ther Exper 29:451–454

Received June 14, 1985

1 Microbiologic typing reagents were generously provided by Prof. Dr. Rosin, Institut für Medizinische Mikrobiologie und Virologie der Universität Düsseldorf