A PROPOSAL FOR SUBDIVIDING THE SPECIES
STAPHYLOCOCCUS AUREUS*

W. Meyer

Institut für experimentelle Epidemiologie,
Zentrallaboratorium für Lysotypie, Wernigerode, D. D. R.

ABSTRACT. Three varieties of Staphylococcus aureus are described. These are characteristic of strains isolated from human, bovine and canine sources.

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The importance of Staphylococcus aureus because of its involvement in human diseases on the one hand, and its great frequency in man and animals on the other, justifies an investigation into possible methods of subdividing this species.

Comparative investigations of S. aureus strains from human, bovine and canine origins established the following tests for differentiating strains from these sources: (1) Phage typing using the International Basic Set and the set recently proposed by Davidson for bovine staphylococci; especially those phages belonging to phage group IV. (2) Coagulase-activity on bovine and human plasmas. (3) The crystal-violet test. (4) The types of haemolysins. (5) The production of fibrinolysin. (6) Pigment formation (used primarily for identification of the true dog strains). These tests are those currently used but it may be possible that better ones will be found in the future.

We reported at the International Symposium on Staphylococci and Staphylococcal Infection held in Warsaw (1965) that the majority of S. aureus strains from bovine and human sources could be placed in 2 varieties based on the different characters of the majority of strains from these two habitats. These two varieties we named subspecies (var.) hominis and subspecies (var.) bovis. These varieties showed some similarities to variants named by Stamatin and coworkers (1958) as var. hominis and var. ovis. As the type strain of

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Table 1. Separation of human, bovine and canine strains of Staphylococcus aureus.

	<u>S. aureus</u>	<u>S. aureus</u> var. <u>bovis</u>	<u>S. aureus</u> var. <u>canis</u>
Coagulase type	H	B + H	B
Pigment	yellow/orange	yellow/orange	white
Crystal-violet type	violet	yellow	white
Fibrinolysin	+	-	-
Haemolysin type	$\alpha \delta$	β on $\beta \delta$	β
Phage type	Patterns of BS without Gr. IV	Gr. IV	NT (or type 187)

B = +ve coagulase using bovine plasma

H = +ve coagulase using human plasma

BS = International Basic Phage set

NT = Not typable.

the species S. aureus is a human strain this nomenclature must be reviewed to fit Rule 7 of the International Code of Nomenclature of Bacteria (1966) which states "...If a species is divided into subspecies, the subspecific epithet of the subspecies which includes the type of the species must be the same as that of the species." It would appear therefore that the human strains should be named S. aureus and the bovine variant should be named S. aureus subspecies (var.) bovis.

At the IXth International Congress for Microbiology in Moscow (1966) we reported a third variety of S. aureus which we designated S. aureus var. canis as we found in support of previous observations by Smith (1947) that the majority of S. aureus strains from dogs possessed distinguishing characters. The characters of var. canis and the other two varieties are shown in Table 1. We have found that strains from bovine source which are able to coagulate bovine plasma within 3 hrs are typical strains of S. aureus var. bovis. Strains of S. aureus from human origin are never able to coagulate this plasma. However, there are a few strains of bovine origin that do not coagulate bovine plasma and it may be necessary to use the other characters outlined in Table 1 to decide the correct classification of a particular strain.

According to our results it is possible satisfactorily to classify 80% of S. aureus strains from the habitats studied. The remaining strains which show atypical results to the tests outlined in Table 1 may in fact be further varieties of S. aureus.

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