Confirmation of Strain VKM B-1733 as the Type Strain of *Halorubrum distributum*

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In a recent paper, Zvyagintseva et al. (I. S. Zvyagintseva, E. B. Kudryashova, and E. S. Bulygina, *Microbiology [Engl. Trans. Mikrobiologiya]* 65:352–354, 1996) proposed that strain 4p, deposited as VKM B-1739, should be the new type strain of *Halobacterium (Halorubrum) distributum*. This strain is sufficiently different from the validated type strain (strain 1m [= VKM B-1733]) to be classified in a different species. The proposed establishment of a neotype strain for *Halorubrum distributum* while the originally designated type strain is extant is in conflict with Rule 18c of the *International Code of Nomenclature of Bacteria*. To avoid all confusion, strain VKM B-1733 should remain the type strain of *Halorubrum distributum*, and a new species may be proposed to include VKM B-1739 and a number of related isolates.

In 1987, Zvyagintseva and Tarasov described a new type of halophilic archaeon, isolated from saline soil, which was different from the previously known members of the family *Halobacteriaceae*. A new species, *Halobacterium distributum* (originally *Halobacterium distributus*) (12), was defined. *Halobacterium distributum* was validated as a new species, and strain 1m, deposited as VKM B-1733, was designated the type strain (1). The recent reclassification of species previously included in the genus *Halobacterium* (3, 6) and the validation of the new genus *Halorubrum* (2) made it necessary to change the name *Halobacterium distributum* to *Halorubrum distributum* (7). Inclusion of *Halobacterium distributum* in the newly proposed genus *Halorubrum (Halorubrobacterium)* was based in part on the 16S rRNA sequence of strain JCM 9100, which was derived from VKM B-1733^T (T = type strain) (3).

An additional strain (strain 4p, deposited as VKM B-1739 and also named *Halobacterium distributum*) was used in later cytological and physiological studies (4, 8). In a paper published in 1995 Zvyagintseva and coworkers (10) designated strain VKM B-1739 the type strain of *Halobacterium distributum*, but no explanation was given for the change. To add to the confusion, Tindall (9) gives as type strain of *Halobacterium distributum* strain 1m (= VKM B-1739), a combination that does not exist.

A proposal to establish strain 4p (= VKM B-1739) as the new type strain of *Halobacterium (Halorubrum) distributum* was published recently (11). On the basis of DNA-DNA homology data and 5S and 16S rRNA nucleotide sequences it was concluded that strain VKM B-1739 and a number of additional isolates (VKM B-1916D, VKM B-1954, and INMI 502) assigned to the species *Halobacterium (Halorubrum) distributum* are sufficiently different from strain VKM B-1733^T to be placed in a different species (DNA-DNA hybridization values, around 60%). The authors suggested that, based on similarities in 16S rRNA nucleotide sequences, strain VKM B-1733^T may be related to *Halobacterium (Halorubrum) trapanicum* and that "For the species identification of strain VKM B-1733, it is

necessary to carry out DNA-DNA hybridization with the type strain *Halobacterium trapanicum* NRC 34021" (a strain no longer available to our knowledge).

The conclusion of Zvyagintseva and coworkers that *Halobacterium distributum* VKM B-1733, which was previously considered the type strain of *Halobacterium distributum*, cannot be assigned to this species, is incorrect. The properties on which the description and validation of the species *Halorubrum (Halobacterium) distributum* were based were those of the type strain designated at the time of the species description (i.e., strain VKM B-1733). When other isolates have different properties, they should be classified in different taxa, and there is no justification for designating another, greatly different strain as the new type strain when it is more convenient for certain purposes.

The establishment of a neotype strain for *Halorubrum distributum*, as proposed by Zvyagintseva and coworkers, is not possible within the rules of the *Bacteriological Code* (5). The only conditions under which a neotype strain may be designated are described in Rule 18c, which deals with cases in which the strain on which the original description was based cannot be found. Rule 18d states that "A strain suggested as a neotype but not formally proposed in accordance with the requirements of Rule 18c (suggested neotype) has no standing in nomenclature until formally proposed and established." As the validated type strain of *Halorubrum distributum* is available from culture collections, there is no reason for the proposal of a neotype. If the type strain has become unsuitable due to changes in its characteristics or for other reasons, the matter should be referred to the Judicial Commission, as Rule 18g demands. In our opinion there is no justification in the present case to warrant such a step. Therefore, strain VKM B-1733 should remain the type strain of *Halorubrum distributum*.

The data presented by Zvyagintseva and coworkers (11) convincingly show that while strain VKM B-1739 belongs to a species different from *Halorubrum distributum* as represented by type strain VKM B-1733, it is a member of the genus *Halorubrum*. This appears to be the case from the polar lipid composition and from the presence of signature bases CA and TG in positions 17 and 18 and positions 25 and 26, respectively (11), combinations found in all *Halorubrum* species that have been described (and also in *Natronobacterium pharaonis*) (2a). Therefore, we suggest that Zvyagintseva et al. to describe and

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validate a new species of *Halorubrum* and include a full phenotypic characterization. This new species should preferably have strain 4p (= VKM B-1739) as its type strain and should include related strains VKM B-1916D, VKM B-1954, and INMI 502.

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