The History And Use Of The Terms Endospore And Spore

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Abstract

‘Spore’ is a word with a great history and includes both reproductive structures and structures which are able to survive by resistance to environmental conditions. Organisms considered to have ‘spores’ include protozoa, fungi, plants, algae and bacteria. In 1876 the term endospore was coined for the highly resistant structures found in some bacteria. The usage of endospore has varied over the years, but they are generally regarded as occurring only in some bacteria, and they must contain dipicolinic acid to be a true endospore. Most of the true endospores occur in the Phylum Firmicutes, in medically important genera such as Bacillus and Clostridium. There are other spore types in bacteria including myxospores, but these are reproductive. Some misuses of the term endospore are attributed to Cyanobacteria and Algae. The more general term ‘spore’ is used for various structures in a wide variety of organisms. In the fungi there are many types of spores and their use is very specific (Based on structure are sporangiospores, zygospores, ascospores, basidiospores, aeciospores, urediniospores, teliospores, oospores, carpospores and tetraspores; or function such as chlamydospores; or life cycle including meiospores and mitospores; or by mobility are zoospores, autospores, and ballistospores). The term cyst is also confusing as it has been defined as a protective capsule and/or resting stage in some animals, plants and protozoa, as well as bacteria. The bacteria Azotobacter is described as forming a cyst of dormant cells with thickened cell walls. The history of ‘spore’ usage for bacteriology needs to be clarified, and most importantly, in the age of computer searches it is critical that the term ‘endospore’ be used whenever research papers are published on endospores so that that proper retrieval of articles may be accomplished. Endospore is a very useful and precise term and proper usage needs to be encouraged.