

## DARWINISM IN THE MICROBIOLOGICAL LABORATORY : EVOLUTION OF THE REAGENTS

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As Charles Darwin's historical work "The Origin of the Species" revolutionized the scientific thinking of the day concerning the evolution of living things in 1859, so now is a revolution of sorts taking place within the microbiological laboratory, in both the *formulations* that have typically been used for decades and the *formats* that these formulations are being use in. This Formulation and Format revolution is changing the way laboratories approach pathogen testing, and forcing the major microbiology suppliers like Biokar Diagnostics to adapt their profile and product catalogue.

What does this revolution entail? It is a revolution principally involving simplicity in interpretation and ease in preparation, exemplified in the use of chromogenic media (Defined Substrate Technology) or "Specific Supplement Incorporation" and ready-to-use or ready-to-melt media, prepared in advance and controlled by the manufacturer. However the price of simplicity in interpretation is often paid for in the complexity of the reactions, and the R & D that goes into such formulations that prove so easy, differential and practical to the laboratory technician. In terms of ready-made media (either plates, vials or tubes), the advent of new European and International standards regulating the quality control tests each laboratory must perform (**ISO 11133-1 & 2** for example), has given a new boost to these formats previously reserved for only limited series of analyses.

Pathogen testing is taking on a new form in many laboratories. Old standards, such as VRBL, Hektoen, PALCAM or even TTC based formulas are giving way to a new family of chromogenic media : at Biokar Diagnostics this involves the COMPASS chromogenic media line, which *Escherichia coli*, *Salmonella*, *Listeria monocytogenes* and even water and food-borne *Enterococci* can now be detected using this next generation media. Other projects for contaminants such as *Bacillus* and *Enterobacter sakazakii* are also in the works, and discussed during the presentation.

The media kitchens many of us remember from our university days are less prevalent now, even if dehydrated media still has, and will always have an important place in most microbiology labs. Quality standards concerning the performance testing of culture media, that require the customer to perform sometimes laborious quality tests are one of the major reasons why ready-to-use or ready-to-melt media are finding widespread acceptance, as the responsibility for the performance testing and quality control is centralized with the manufacturer. The customer has nothing to do but to open the boxes, inoculate the media in many cases, incubate and read the results. The practical aspect of culture media already made can not also be denied. But as in the case of chromogenic media, good quality culture media has complex concepts and production behind it, including the use of specific water, environmental controls and trained personnel. At Biokar Diagnostics, the movement towards prepared media was addressed in 2005 with the opening of a new, state-of-the-art prepared media production facility. The elements that contribute to producing high quality prepared media on an industrial scale, the differences between customer-made and manufacturer-made media and the relationship to ISO 11133-2 will be discussed during this presentation.

The Formulation and Format revolution taking place in the culture media world is far from the controversy associated with Charles Darwin's epic work, but in many ways mirror the natural selection his theory entailed. Darwin suggested that in a world of stable populations where each individual must struggle to exist, those with the "best" characteristics will be more likely to survive. Biokar Diagnostics believes that in a competitive marketplace, those with the best products or formats, giving the most accurate and readily interpreted result, associated with a quality concept in manufacturing will be the most likely to be adopted by the customer base, and therefore the most likely to thrive. Combined with a technical and informational base that encourages customer proximity, and supported by a strong distributor network, Biokar Diagnostics own "evolution of the reagents" is dedicated to the service of its customers.

#### **BIOKAR Diagnostic – high quality microbiology products!**

Biokar Diagnostics is one of the largest producers of dehydrated media, supplements and reagents in Europe, focusing on essentially the agro-food, environmental, cosmetic and pharmaceutical markets. By virtue of its leadership position in the French marketplace and due to the nature of its parent company (Solabia S.A., third largest peptone manufacturer worldwide), Biokar Diagnostics offers a wide range of media products (250 +) and a strong technical and quality focus, that have resulted in significant market penetration for such products as **RPF (Rabbit Plasma Fibrinogen)** media for coagulase positive staphylococci and the **COMPASS** chromogenic media line. Other easy-to-use chromogenic references include **TBX agar** for *Escherichia coli* and **Rose-Gal BCIG** for *E. coli* and thermotolerant coliforms.

With close to 35 years of experience in the manufacturing of culture media, Biokar Diagnostics benefits from the in-house manufacturing of peptones, arguably one of the most important raw materials in a microbiological culture media. This nitrogen source directly impacts on the quality and growth capacity of the culture media, and immediate access to this essential element is an advantage that is passed on to customers. Indeed, with the advent of BSE concerns for fermentation or sterility media, for example, Biokar Diagnostics is uniquely poised to offer non-animal substitutes for its pharmaceutical and agro-food customers that are based on the classical animal references. Products like **Non-Animal MRS broth** (for lactic fermentation) and **Non-Animal Tryptic Soy broth** (for sterility control and fermentation uses) are quickly attracting significant interest in many industrial applications. And the list of non-animal references are just beginning. Of particular interest to the water testing laboratories is the recent development of the various *Legionella* media in pre-poured plates, required for both ISO and NEN (Benelux) standards. These new references add to an already long list of water microbiology testing media that include **CN agar** (Pseudomonas), **Tergitol 7** (coliforms), **Slanetz & Bartley** (enterococci) and **Yeast Extract agars** (total count) all in conformity to international standards.

Represented in Slovakia and Eastern Europe by the **NOACK Group of companies**, this collaboration brings a technically oriented, customer proximity approach to the agro-food diagnostics market. Competent, experienced people are able to advise, demonstrate, communicate and propose workable, effective solutions for the specific diagnostic concerns of the agro-food and related industries. Stop by our stand to meet the people and discuss your culture media needs

**“we have solutions to your microbiological needs”.**

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