Commentary

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C. albicans Attempts to Attack and Colonize Human Tissues

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Description

Candida species are the significant microbes that are normally present in the mouth, vaginal, respiratory, and gastrointestinal tracts. Infections with fungi worldwide are frequently accompanied by *Candida* species and transmitted through sexual activity. *Candida albicans*, the principal causative agent of systemic candidiasis with fatality rates close to 50%, is the fourth most common cause of hospital-acquired infectious conditions and is responsible for more than 90% of invasive infections. Additionally, Candida infections can affect both wild and domestic animals, particularly cattle. This reveals that animals may serve as carriers of disease-causing strains or as repositories for such strains, posing a risk to individuals with impaired immune systems. *C. albicans* attempts to attack and colonize human tissues by discharging potent chemicals into the bloodstream, resulting in symptoms including lethargy, persistent diarrhea, yeast vaginitis, constipation, bladder infections, painful joints and muscles, menstruation disorders, and severe melancholy. The introduction of the azole groups of antifungals during the last two decades has modified the management of fungal infections. One of these effective antifungal azoles is miconazole.

Biosafety Accreditations

For the quantitative determination of TCZ in its pure form and pharmaceutical preparations, two approaches are presented in this paper. The Kirby-Bauer disk diffusion method serves as the foundation for the first microbiological approach. The disks were placed on the agar medium that had been inoculated with the studied Candida species and incubated under the appropriate conditions after being loaded with TCZ in varying concentrations. The concentration of TCZ was used to measure the inhibition zone. Charge transfer complex formation at room temperature between TCZ and Chloranilic Acid (CA) was the foundation of the second method. Tioconazole (TCZ) is a manufactured wide range subbed imidazole antifungal specialist. Tioconazole is regularly used to treat yeast diseases, dermatophytosis, and shallow and vaginal candidiasis. Additionally, it is effective against some gram-positive bacteria, chlamydia, and trichomonas. Barely any techniques for quantitative TCZ examination have been depicted in the writing, including spectrophotometric superior execution fluid chromatography fine electrophoresis electrokinetic chromatography, and laser electrospray mass spectrometry. Although HPLC is an efficient, sensitive, and selective analytical technique that is frequently utilized in pharmaceutical analysis, it necessitates highly skilled expertise, costly equipment that is not typically found in some quality control units, and time-consuming procedures to establish the optimal chromatographic conditions. The revealed spectrophotometric approaches, but basic, are less delicate and non-specific. The need for additional data manipulation through derivatization and the possibility of interference when measuring TCZ's native ultraviolet absorption are additional limitations. To determine TCZ in both its pharmacological dosage forms and its pure form, new, alternative spectrophotometric methods must be developed. Two touchy microbiological and charge move spectrophotometric techniques have been created for the quantitative assurance of the antifungal medication, tioconazole, in its unadulterated structure and drug arrangements. The microbiological examine depended on the agar plate dissemination technique by estimating the measurement of the restraint zones connected with various convergences of tioconazole.

Bacterial Pollutions

Variability of salt content in dry-cured ham production can pose microbiological food safety issues, especially in salt reduced and/or non-nitrified products. In this regard, Computed Tomography (CT) could help to non-invasively characterized the product to further adjust the production process and ensure its safety. The aim of this work was to study the application of CT to estimate aw in dry-cured ham to be used by predictive microbiology to evaluate the impact of the production process on the behavior of Listeria monocytogenes and Clostridium botulinum. Effect of nitrite elimination and fat content of hams was also evaluated. Thirty hams with two different fat content levels were characterized analytically and using CT at different key points in the process. The safety of the process was evaluated by applying predictive microbiology using both analytical and CT data as model inputs. Results showed that nitrite and fat content had an impact on the predicted growth potential of the pathogens evaluated. After the resting period, if no nitrite is added, the time needed for log increase of monocytogenes would shorten by 26% and 22% in lean and fat

hams, respectively. After week 12, important differences on values for C. botulinum were found between both groups of hams. CT can provide reliable pixel-to-pixel information for predictive microbiology to evaluate the growth of relevant pathogens, but further studies are needed to validate this combination as a tool to evaluate the safety of the production process. Salt content variability of the production, and also within the same ham, can affect the product stability during the process. Hams with a lower salt content are of special concern since they are the most prone to the growth of microbiological hazards. During the process, to avoid the growth of some non-desirable microorganisms, the processing temperatures are crucial and need to be adjusted all of this evidence demonstrates the importance of evaluating and optimizing the conditions at the different stages of the production process. Thus, the development of new tools, based on non-invasive technologies and predictive microbiology able to evaluate the safety of the process in-line is of maximum interest.