

Carolina Herrera. Classic beauty — demure smoky eyes and a romantic updo — was expected for Herrera's last show before stepping down from her namesake brand. Terracotta color of lipstick in fashion in 2018 very favorably emphasizes the skin of persons.

For the Oscar de la Renta show. Tom Pecheux created a subtly glimmery effect, layering violet cream shadow over models' lids before blossoming pink-and-purple-tinged glitter over top. In addition to placing it on the upper lids, he also intentionally dabbed a bit on the lower lash line, concentrated at the center, to embrace the inevitable fallout.

The brightest trends in makeup in 2018 that were presented at the Milan Fashion Week were smoky eye, redliner, graphic eyeshadow, flawless skin.

Thus, runway make-up embody freedom of imagination. When an image is created, artist can not think about the framework of society and some canons of beauty. Therefore, in the creation of an ideal show stylists and makeup artists play an important role and they should work in close tandem with designers, so that in the future, the images created by them entered the history of fashion.

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THE HPLC METHOD FOR THE ANALYSIS OF SIROLIMUS IN DRUG PRODUCTS

Antibiotic is one of the most important commercially exploited secondary metabolites produced by bacteria, fungi and Streptomyces and employed in a wide range. Most of the antibiotics used today are from the microbes. [2]

The **aim** of this study was to research a simple, rapid and sensitive reverse phase high performance liquid chromatography (RP-HPLC) method for quantification of sirolimus (SRL) in pharmaceutical dosage forms.

Sirolimus (SRL, formerly rapamycin: C₅₁H₇₉NO₁₃, CAS: 53123-88-9) is a lactone-lactam macrolide antibiotic with immunosuppressant and anticancer effects. It was first identified as an antifungal agent produced by the *Streptomyces hygroscopicus* bacterium and was subsequently demonstrated to be a potent immunosuppressive agent that was approved by the U.S. Food and Drug Administration (FDA) to be used beside cyclosporine or tacrolimus in kidney transplantation. In contrast to tacrolimus and cyclosporine, which inhibit the production of cytokines, sirolimus binds to the FK (peptidyl-prolyl cis-trans isomerase) binding protein which modulates the activity of the mammalian Target of Rapamycin (mTOR). The mTOR inhibits Interleukin-2-mediated signal transduction, resulting in cell cycle stop in the G₁-S phase and prevents cell cycle progression and proliferation, hence blocks the response of T- and B-cell activation by cytokines. [4] These pharmacological properties allow rapamycin not only to be a promising immunosuppressant with the absence of nephrotoxicity but also to be a possible chemotherapeutic agent against many types of solid tumor. SRL is a white to off-white powder, insoluble in water, very slightly soluble in hexane and petroleum ether, soluble in methanol, diethyl ether, and N, N-dimethylformamide (DMF) and freely soluble in benzyl alcohol, chloroform, acetone, and acetonitrile (ACN). [1] Validation of new analytical methods for pharmaceutical products is a requirement of Current Good Manufacturing Practice (cGMP) regulations. As stated by the current International Conference on Harmonization (ICH) guideline, accuracy, precision, linearity and stability of test methods are some of the analytical parameters which require assays validation. [3] Several types of analytical methods have been used for quantification of SRL, including immunoassay, HPLC ultraviolet, and HPLC mass spectrometric detection (HPLC-MS or HPLC/MS/MS). The immunoassay is not commercially available, and there is an acute need for an accurate, rapid, and simple chromatographic assay to determine SRL in drug development procedure and also

post marketing investigations. Considering the less complication and readily availability of HPLC-UV method in research laboratories and clinic a simple and rapid chromatographic method in the present study was developed to routine analysis of sirolimus concentration.

Conclusion: Therefore the rapid and sensitive developed method can be used for the routine analysis of sirolimus such as dissolution and stability assays of pre- and post-marketed dosage forms. The analytical method described in this paper has good accuracy, precision, linearity and is suitable for SRL assay. As the method was successfully validated based on ICH guidelines, it can be readily used in quality control laboratories for the routine pharmaceutical analysis. Also this simple and rapid method can simplify performance in developing new formulations. Further investigations are necessary to adopt this method to protein binding analysis and clinical monitoring of plasma level in therapeutic drug monitoring (TDM) studies and dose adjustment.

REFERENCES

1. Asensi Diez R, Quesada Sanz MP, Valverde Molina E, de Ramon Garrido E, Gomez Maldonado J, Munoz Castillo I. Comparison of high-resolution liquid chromatography versus microparticle enzyme immunoassay for the measurement of sirolimus levels in renal transplantation. *Farm Hosp.* 2006;30(3):142–8.
2. Chen KH, Tsai MK, Lai IR, Lin WU FL, Hu RH, Lee PH. Favorable results of concomitant tacrolimus and sirolimus therapy in Taiwanese renal transplant recipients at 12 months. *J Formos Med Assoc.* 2008;107(7):533–9.
3. Di Marco GS, de Andrade MC, Felipe CR, Alfieri F, Gooding A, Silva HT Jr. et al. Determination of sirolimus blood concentration using high-performance liquid chromatography with ultraviolet detection. *Ther Drug Monit.* 2003;25(5):558–64.
4. Jones K, Saadat-Lajevard S, Lee T, Horwatt R, Hicks D, Johnston A. et al. An immunoassay for the measurement of sirolimus. *Clin Ther.* 2000;22(Suppl B):b49