ACNE, ROSACEA, AND RELATED DISORDERS (INCLUDING HIDRADENITIS SUPPURATIVA)

DOXYCYCLINE 40 MG MODIFIED RELEASE CAPSULES REDUCED INFLAMMATORY BIOMARKER EXPRESSION AND IMPROVED CLINICAL OUTCOMES IN PAPULOPUSTULAR ROSACEA

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Background: The molecular and physiological processes involved in papulopustular rosacea (PPR) are not yet fully understood, but pro-inflammatory molecules are thought to play a role in the disease. Biomarkers associated with PPR include cathelicidins, their proinflammatory peptide byproducts, serine proteases (eg kallikrein [KLK]-5), and matrix metalloproteinases (MMPs). Doxycycline has been reported to inhibit MMP activity by directly binding the molecule, and by suppressing MMP genes.

Objective: Evaluate the effect of doxycycline on inflammatory biomarkers in PPR.

Methods: This 12 week study assessed PPR treatment efficacy of doxycycline 40 mg modified release capsules (doxycycline MR) and skin cathelicidin and related biomarker activity in 170 subjects aged 18-70 with clinically diagnosed PPR (5-40 papules or pustules). Assessments: inflammatory lesions, IGA, CEA at baseline, and at weeks 2, 4, 8, and 12, tape stripping, and skin biopsies (2 mm or 3 mm, baseline and week 12).

Results: Doxycycline MR significantly reduced inflammatory lesions and was significantly associated with treatment success (IGA of clear/near clear) at weeks 4, 8, and 12 (P<.05). Doxycycline MR treatment, treatment success, and lower clinical severity were associated with significantly lower biomarker levels at week 12 compared to baseline (P<.05). Total protease activity was statistically lower at week 4 compared to baseline in the doxycycline MR treatment group (P=.026). In both the doxycycline MR and placebo treatment groups, clinical success was associated with statistically lower cathelicidin levels at weeks 8 and 12 compared to baseline (P=.004 and .041, respectively).

Summary: Doxycycline MR was efficacious for the treatment of PPR and reduced cathelicidin and related biomarkers. These results indicate that these biomarkers may be a useful diagnostic tool, and support an anti-inflammatory mechanism for doxycycline in rosacea therapy.