





ET DE LA CULTURE  
E L'ÉDUCATION NATIONALE, DE LA JEUNESSE ET DES SPORTS

# DIPLÔME DE DOCTEUR

DE L'UNIVERSITE LOUIS PASTEUR DE STRASBOURG I

(Arrêté du 23 novembre 1988 relatif aux études doctorales)  
avec (2)

produits par Mademoiselle MILIONI Catherine  
à ATHENES (GRECE)

t que l'intéressé(e) a présenté en soutenance, conformément au  
une thèse ou un ensemble de travaux (3) portant  
DE THIOSTEROIDES ANTI-INFLAMMATOIRES

sein de (1) L'UNIVERSITE LOUIS PASTEUR DE STRASBOURG  
et composé de M.M. E. GROSSH  
RAPIN

jury prononçant l'admission de l'intéressé(e) avec la mention  
DOCTEUR DE (1) L'UNIVERSITE LOUIS PASTEUR DE STRASBOURG  
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ayant, le cas échéant, collaboré

(4) Désignation de la discipline  
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## The cutaneous corticosteroid vasoconstriction assay: a reflectance spectroscopic and laser-Doppler flowmetric study

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### Summary

Cutaneous vasoconstriction induced by topical corticosteroids was investigated using non-invasive bioengineering techniques. Corticosteroids of different potency in alcoholic solution were applied topically, under occlusion, and cutaneous blanching was investigated using visual inspection, reflectance spectroscopy (RS) and laser-Doppler flowmetry (LDF). The RS technique allowed the separation of cutaneous haemoglobin content into arterial oxygenated (OH) and venous deoxygenated haemoglobin (DOH) components.

Application of alcohol decreased total haemoglobin by 10%, with a corresponding 8% increase in blood flow (BF). Clobetasol propionate was the most potent vasoconstrictor, inducing significant visible blanching and decreasing DOH (30%), OH (33%) and BF (18%) ( $P < 0.01$ ). Fluocinonide, acetamide, betamethasone-17-valerate and dexamethasone also caused visible blanching (10-15%). There was no significant decrease in BF, but reflectance spectroscopy showed a decrease in DOH ( $P < 0.01$ ). Tixocortol, CMJ and hydrocortisone acetate did not produce significant blanching, although DOH was decreased compared with the alcohol control.

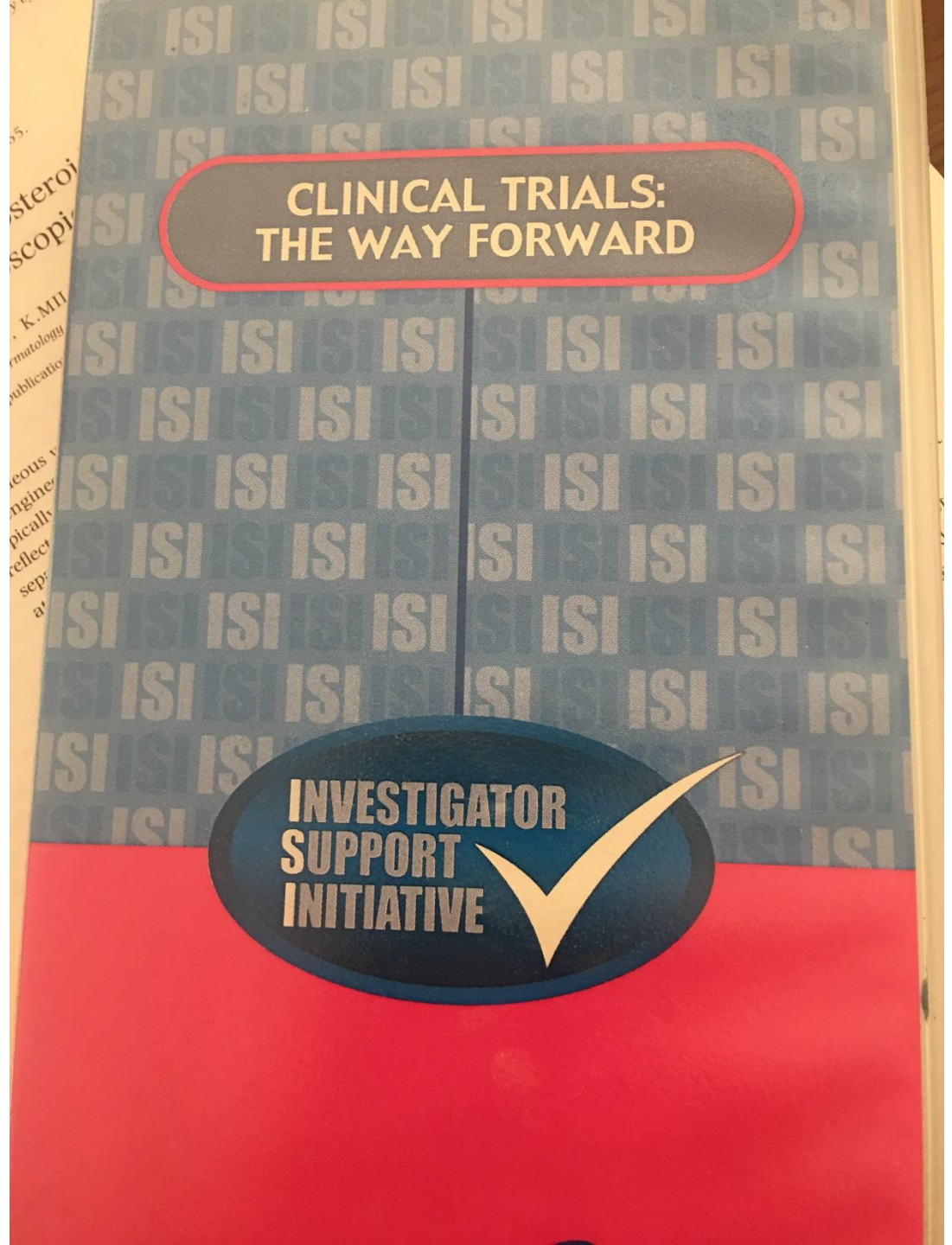
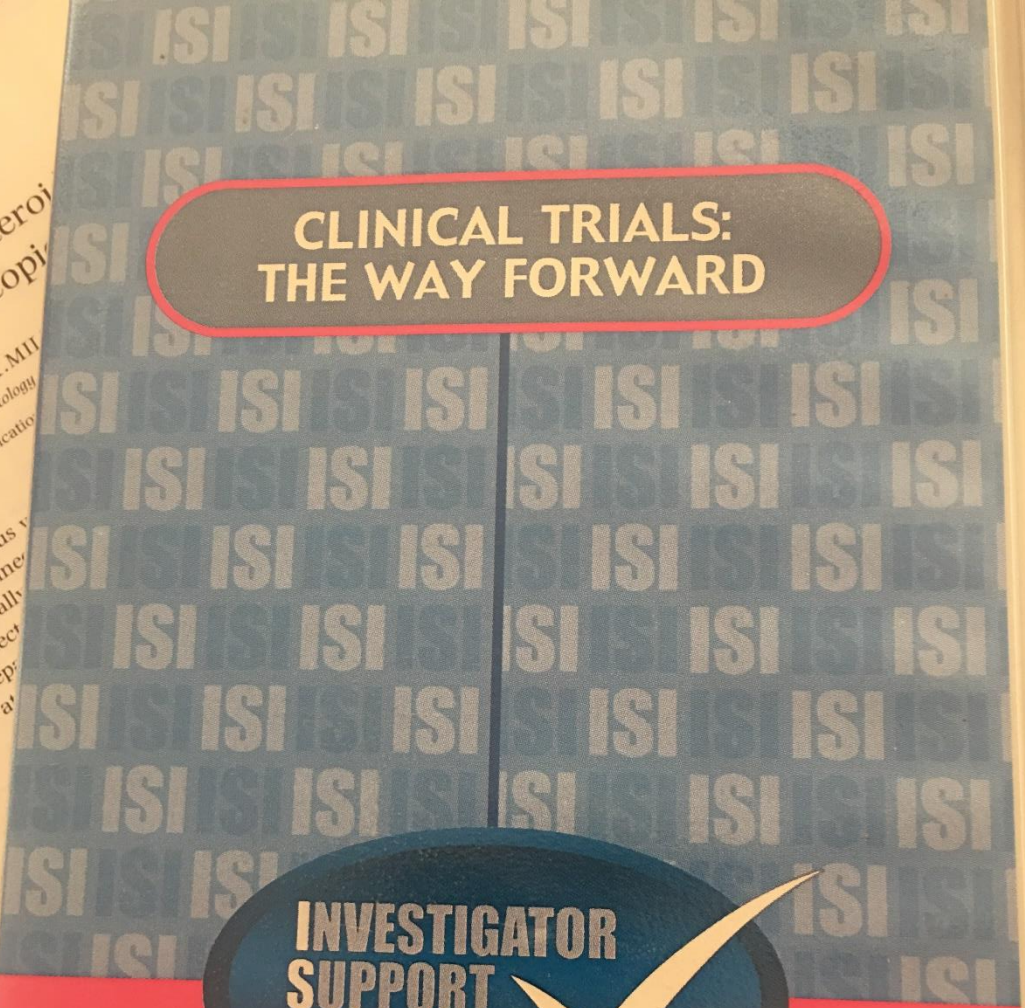
Measured by reflectance spectroscopy, corticosteroid-induced blanching was predominantly venoconstriction and only the most potent corticosteroid caused a significant decrease in blood flow. This may explain why previous attempts to improve cutaneous vasoconstriction using laser-Doppler flowmetry have been unsuccessful.

**CLINICAL TRIALS:  
THE WAY FORWARD**

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