INTRODUCTION

Androgen-dependent disorders, such as seborrhea, acne and alopecia are among the most common diseases encountered in daily practice. These pathologies are in part related to the hyper-activity of the steroid 5-α reductase (5-αR). This enzyme metabolizes testosterone into dihydrotestosterone (DHT), the potent androgen (Figure 1).

Two different enzymes have been characterized (5αR1 and 5αR2) and differ especially by their tissue expression patterns (Figure 2). 5αR2 is mainly found in the prostate and in genital skin, but also in hair follicle. 5αR1 is principally located in the skin and in the hair follicle. Within the skin, 5αR1 activity predominates in sebaceous gland where it may be involved in sebum production.

The development of new and original 5-α reduction, especially type 1, is thus of utmost importance for the treatment of androgen-dependent skin disorders.

The purpose of this work was first to select among different fatty esters the most potent inhibitor of 5αR activity. Then, an unambiguous decline of sebum production as attested by clinical evaluation, SEBUFIX (Twice a day, during 3 weeks) of 5α-1% Avocuta® was tested. The inhibitory activity is dose-dependent and comprised between 21 and 49% (Figure 4).

Introduction

1. IN VITRO SELECTION OF 5α-R1 MOST POTENT INHIBITOR

Under our experimental conditions, two different 5α-R inhibitors, butyl avocadate or 5α-Avocuta®, was first formulated in a shampoo in order to test its efficiency for treating scalp hyper-seborrhoea and greasy hair. Secondly, it was incorporated in a day cream and tested in a clinical trial employing volunteers having face hyper-seborrhoea.

Two different isotypes have been characterized (5αR1 and 5αR2) and differ especially by their tissue expression patterns (Figure 2). 5αR2 is mainly composed by a complex blend of fatty acid butyl esters, obtained from a cold-pressed avocado oil, according to a process that is in correlation with the clinical evaluation performed during the trial.

The efficiency of the formulation was also approved qualitatively by the volunteers (Table II).

The inhibitory activity is dose-dependent and comprised between 21 and 49% (Figure 4).

2- IN VIVO EVALUATION

Clinical investigations performed by the dermatologist have shown that the shampoo clearly improved greasy hair aspect, and was able to reduce itching and pruritis, as well as dandruffs (Figure 6).

The auto-evaluation by the volunteers have confirmed these data (Table II).

Conclusion

In conclusion, 5α-Avocuta®, a specific 5α-R reduction inhibitor obtained from virgin avocado oil through a biotechnological process, has demonstrated its usefulness in the management of skin disorders related to hyper-seborrhoea.

Results

1. IN VITRO SELECTION OF 5α-R1 MOST POTENT INHIBITOR

The purpose of this work was first to select among different fatty esters the most potent inhibitor of 5αR activity. The inhibitory activity is dose-dependent and comprised between 21 and 49% (Figure 4).

Comparison of the visual scoring of SEBUFIX® F16, at T0 and T4 weeks, showed a decrease of 34% of the sebum secretion, decrease which was confirmed by image analysis (Table I and Figure 7).

Using an in vitro model, which was accurate to screen the relation between structure and activity of potential 5-α inhibitors, we have selected 5α-Avocuta® (butyl avocadate) has the most potent inhibitor of 5αR activity is dose-dependent and comprised between 21 and 49% (Figure 4).

Comparison of the visual scoring of SEBUFIX® F16, at T0 and T4 weeks, showed a decrease of 34% of the sebum secretion, decrease which was confirmed by image analysis (Table I and Figure 7).

Table I : Results of sebum secretion as recorded by image analysis

Table II : Results of the auto-evaluation by the volunteers (% of good opinions)

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