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Inhibition of 5 α -reductase activity in human skin by zinc and azelaic acid

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SUMMARY

The effects of zinc sulphate and azelaic acid on 5 α -reductase activity in human skin were studied using an *in vitro* assay with 1,2[³H]-testosterone as substrate. When added at concentrations of 3 or 9 mmol/l, zinc was a potent inhibitor of 5 α -reductase activity. At high concentrations, zinc could completely inhibit the enzyme activity. Azelaic acid was also a potent inhibitor of 5 α -reductase; inhibition was detectable at concentrations as low as 0.2 mmol/l and was complete at 3 mmol/l. An additive effect of the two inhibitors was observed. Vitamin B6 potentiated the inhibitory effect of zinc, but not of azelaic acid, suggesting that two different mechanisms are involved. When the three substances were added together at very low concentrations which had been shown to be ineffective alone, 90% inhibition of 5 α -reductase activity was obtained. If this inhibition is confirmed *in vivo*, zinc sulphate combined with azelaic acid could be an effective agent in the treatment of androgen related pathology of human skin.

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