VASCULAR ACTIVITY OF ISOLATES FROM THE HYACINTHACEAE OF SOUTH AFRICA

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Background and purpose. A series of isolates [(compounds 1, 2, 3, and 4 (homoisoflavanones),
compound 5 (sesquiterpenoid), compound 6 and 7 (bufadienolides)] from the South African Hyacinthaceae family have been assessed for their vasorelaxant effect.
Experimental approach. Aorta ring preparations were employed for functional experiments.
Key results. Compounds 2, 3, and 4 inhibited the sustained tonic contraction induced by both 60 mM K+ (K60) and phenylephrine. Compounds 5, 6, and 7 caused a modest concentration-dependent relaxation, whereas compound 1 was ineffective. In rings stimulated with either K25 or K60, compound 3 displayed antispasmodic effects, which were not reversed by tetraethylammonium. Compound 3 caused a significant leftward shift of the concentration-relaxation curves for either isoprenaline or sodium nitroprusside on rings precontracted with phenylephrine. Furthermore, 3'-isobutyl-1-methylxanthine had no effect whereas 1 H-[1,2,4] oxidazolol [4,3-a] quinoxalin-1-one shifted to the right the concentration-relaxation curve of compound 3 in rings precontracted with phenylephrine. Both compound 3 (estimated pIC_{50} = 4.66) and ryanodine reduced significantly the response to phenylephrine in the absence of extracellular Ca^{2+}. Phenylephrine-stimulated influx of extracellular Ca^{2+} was markedly reduced when tissues were pretreated with compound 3 (pIC_{50} = 5.14) or nifedipine, and stimulated when they were pretreated with ryanodine. Compound 3 was also able to antagonise partially the contraction induced by phorbol 12-myristate-13-acetate.
Conclusions and Implications. These results provide functional evidence that of the isolates from South African Hyacinthaceae tested, compound 3 proved to be an effective vasorelaxing drug. Its myorelaxing effect requires the activation of sGC.

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