

## BONE

ULMANEN, M.S., PEKKARINEN, T., HIETALA, O.A., BIRR, E.A. & JALOVAARA, P. 2005. Osteoinductivity of partially purified native ostrich (*Struthio camelus*) bone morphogenetic protein: comparison with mammalian species. *Life Sciences*, 77: 2425-2437.

Bone morphogenetic proteins (BMPs) are members of the TGF-beta superfamily. They are capable of inducing ectopic bone formation. Until now, the main interest has been focused on mammalian osteoinductive BMPs, and there are no reports of native BMP extracts of birds. In this study, we isolated and characterized native BMPs of ostrich (*Struthio camelus*) and compared them with identically isolated native bovine (cow) and reindeer BMPs with regard to BMP pattern and osteoinductive capacity. The ostrich BMP pattern differed markedly from that of cow and reindeer BMP in non-reduced SDS-PAGE, reduced SDS-PAGE and Western blot. The differences in isoelectric focusing analysis were smaller. However, the ostrich BMP extract had a peak at pH 5.1, clearly differing from the BMPs of cow and reindeer. The osteoinductive capacity and density of ectopic bone, induced by BMP extracts in a mouse thigh muscle pouch, were determined radiographically. The ostrich BMP extract displayed significantly lower osteoinductive capacity and density of induced bone than the bovine and reindeer BMP extracts. In conclusion, our results indicate that the BMP pattern of birds differs considerably from that of mammals, and that the osteoinductive capacity of BMPs and the density of induced bone are lower in birds than in mammals. They also suggest that the bone metabolism of birds is adapted to make light bones suitable for flying.