

ABSTRAK

MUHAMMAD FARHAN WILDANI ZAKI. Studi Nilai BUA Pada Quantitative Ultrasound Dengan Metode Transmission Dan Backscatter Pada Sampel Tulang Sapi. Dibawah Bimbingan UMIATIN dan TARYUDI.

Kondisi kelainan pada tulang saat ini dapat diidentifikasi dengan cara mengukur energi relatif yang diserap dari gelombang ultrasonik yang disebarkan melalui tulang. Dimana gelombang ultrasonik dipancarkan oleh transducer transmitter kemudian diteruskan melewati sampel tulang dan diterima oleh transducer receiver dengan parameter Broadband Ultrasound Attenuation (BUA). Nilai Broadband Ultrasound Attenuation (BUA) dapat diperoleh melalui pengukuran mikrostruktur tulang menggunakan metode transmission dan metode backscatter. Pada penelitian ini bertujuan untuk mengetahui pengukuran mikrostruktur tulang yang lebih baik antara metode transmisi dan backscatter, dimana data yg digunakan merupakan data sekunder dari hasil penelitian sebelumnya. Pengukuran metode transmission dan metode backscatter dilakukan pada tulang femur sapi dengan frekuensi 1 MHz menggunakan medium gel. Pada metode transmission, transducer dan receiver diletakan berhadapan diantara objek, sedangkan pada metode backscatter diletakan bersebelahan. Dan data yang digunakan dari metode backscatter yaitu pada pengukuran sudut 90° karena sudut yang optimal untuk menentukan nilai Broadband Ultrasound Attenuation (BUA) tulang pada peneliti sebelumnya. Berdasarkan hasil pengukuran yang telah dilakukan maka pengukuran nilai Broadband Ultrasound Attenuation (BUA) pada tulang dengan metode transmission lebih baik dari metode backscatter karena hanya sedikit faktor yang mempengaruhi dalam pengukuran seperti ketebalan objek.

Kata kunci : Broadband Ultrasound Attenuation, metode transmission, metode backscatter

ABSTRACT

MUHAMMAD FARHAN WILDANI ZAKI. Study of BUA Value on Quantitative Ultrasound with Transmission and Backscatter Methods on Cow Bone Samples. Under the guidance of UMIATIN and TARYUDI.

The abnormal condition of the bone can be identified by measuring the relative energy absorbed from ultrasonic waves distributed through the bones. Where the ultrasonic waves are emitted by the transducer transmitter then forwarded through the bone sample and received by the receiver transducer with a Broadband Ultrasound Attenuation (BUA) parameters. A Broadband Ultrasound Attenuation (BUA) value can be obtained through a microstructure measurement bone using transmission methods and a backscatter method. On this study it's intended to get a better measurement of microbone structure between transmission methods and backscatter, where the data used was secondary to the results of previous research. Measurement with transmission methods and backscatter methods are done on a cow's femur with a 1 MHZ fretting using a gel medium. In adoptive methods, a transducer and receiver are placed face to face between objects, while in a backscatter method is placed next to each other. And the data used from a backscatter method is on a 90° measurement because of the optimal angle to value Broadband Ultrasound Attenuation (BUA) bone in a previous researcher. Based on the measurements already done, a Broadband Ultrasound Attenuation (BUA) measurement on the bone by a infinitely superior backscatter method because only a small factor affects in measurement like the thickness of an object.

Keyword: *Broadband Ultrasound Attenuation, transmission methods, backscatter methods*