# 6    Summary

**Sonographical and histological examination on the normal and the non-neoplastic altered mammary gland tissue of the dog**

The aim of this thesis was to determine if grey-scale sonography is suitable for differentiating non-neoplastic disorders of the mammary gland of the dog. Healthy tissue of which the sonographical appearance was compared to the histologic findings was also presented.

Bitches with changes in the mammary gland were referred to the small animal hospital of the "Freie Universität Berlin" for mammary gland resection. Systematic ultrasonic examination of the affected mammary glands was carried out previous to surgery.

Altogether 29 re-dissected mammary glands were histologically processed, evaluated and compared to the ultrasonic results belonging to them.

In order to assign different types of tissues, a classification of the healthy tissue in four different functional states was made. These are; the tissue with explicit secretion, the tissue without or with slight secretion, the inactive tissue and the atrophic tissue. The non-neoplastic changes were as classified by GUTBERLET (1994) whereby another seventh, additional point was added. This was the group of non-neoplastic changes, which were not initiated by the tissue of the mammary gland.

It was obvious that the sonographic representable differences of healthy tissue of the Mamma are slight; only the atrophic gland tissue is characterised – in comparison to the other three function groups – by a more distinct echo density. The sonographic image of the teat is quite uniform with sharp edges, homogenous average-echo-rich internal structure and fine-grained.

The cystic changes of the Mamma tissue can be sonographically represented and shown starting from a diameter of 4 mm, revealing the well known attributes of structures filled with liquid. Only one non-inflammatory lobular hyperplasia reveals itself as a sonographically visible leasion. It exhibits criteria of malignity, i.e. indistinct edges and an inhomogeneous echo structure.

On the other hand the lymph nodes appeared as benign changes with sharp edges and a homogenous internal structure. The skin-cysts also appeared equally, but they can be defined by the inclusion of the skin. The osseous metaplasia of the gland tissue appeared sonographically as other structures made of bone with complete sound-absorbtion.

Thus for the dog, distinct criteria from human medicine can be applied. These are the appearance of cysts and lymph lumps, which resemble human medical knowledge. In addition to that , in this thesis the sonographical anatomy of the healthy tissue of the mammary gland of the dog is presented by broad examination just as that of the teat. Also the presentation of non-inflammable hyperplasias, skin-cysts and osseous metaplasias is made for the first time.

The developed results show that the sonographical examination of the dogs mammary gland is useful in order to differentiate e.g. cystic structures starting from 4 mm diameter of solid tumors. Also the atrophic gland tissue can be differentiated, with significant assurance, from other functional states. Above all the investigations in the recent study and the so gained new knowledge of the sonographical anatomy of the bitches mammary gland helped this differentiation. The sonographic images presented in this work can thus be used as provisional standard pictures in order to assign specific criteria to expected results found during ultrasonic examinations in veterinary practice.

However not every dysplasia found during ultrasonic examinations in veterinary surgery can be differentiated from neoplastic changes with sufficient security. To obtain further assurance, more detailed examinations are necessary. Improvements of the differentiability of the different changes can be achieved by refined and improved ultrasonic examination technologies. This would allow further development and differentiation of the sonographical criteria presented in this work.