

Table S1. Eligibility criteria.

| Inclusion criteria | Exclusion criteria |
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| <ul style="list-style-type: none"> • A subject is over 18 years of age; • Diagnosis of primary breast cancer with lymph node metastases; • Availability of results from HER2 status test previously determined using a biopsy material from a primary tumour and metastatic LN, either HER2-positive, defined as a DAKO HercepTest™ score of 3+ or FISH positive or HER2-negative. defined as a DAKO HercepTest™ score of 0 or 1+ or else if 2+ then FISH negative; • Haematological, liver and renal function test results within the normal limits; • A negative pregnancy test was requested from all patients of childbearing potential and capability to undergo the diagnostic investigations planned in the study | <ul style="list-style-type: none"> • Any system therapy (chemo-/targeted therapy); • A second, non-breast malignancy; • Active current autoimmune disease or history of autoimmune disease; • Active infection or history of severe infection within the previous 3 months (if clinically relevant at screening); • Known positive HIV test or chronically active hepatitis B or C; • Administration of other investigational medicinal products within 30 days of screening; • Ongoing toxicity > grade 2 from previous standard or investigational therapies. according to the US National Cancer Institute. |

Table S2. Accumulation [^{99m}Tc]Tc-ADAPT6 in primary breast tumours, reference organs and tumour-to-reference tissue ratios.

| No | SUV _{max} (breast tumour) | SUV _{max} (Backg.) | Tumour- to- contralat. ratio | SUV _{max} (liver) | SUV _{max} (LDM) | SUV _{max} (spleen) | Tumour- to-liver ratio | Tumour- to-LDM ratio | Tumour- to- spleen ratio |
|------------------------------|--|--------------------------------|---------------------------------------|-------------------------------|-----------------------------|--------------------------------|------------------------------|----------------------------|-----------------------------------|
| <i>HER2-positive tumours</i> | | | | | | | | | |
| 1 | 9.6 | 0.36 | 26.67 | 3.65 | 0.14 | 2.45 | 2.63 | 68.57 | 3.92 |
| 2 | 6.19 | 0.38 | 16.29 | 1.96 | 0.29 | 0.8 | 3.16 | 21.34 | 7.74 |
| 3 | 8.41 | 0.7 | 12 | 2.74 | 0.62 | 1.99 | 3.07 | 13.56 | 4.23 |
| 4 | 10.25 | 0.44 | 23.29 | 3.18 | 0.44 | 0.55 | 3.22 | 23.29 | 18.64 |
| 6 | 7.93 | 0.66 | 12 | 2.88 | 0.48 | 1.69 | 2.75 | 16.52 | 4.69 |
| 8 | 9.09 | 0.55 | 16.5 | 3.09 | 0.58 | 1.39 | 2.94 | 15.67 | 6.54 |
| 10 | 7.89 | 0.63 | 12.5 | 2.74 | 0.42 | 1.06 | 2.88 | 18.78 | 7.44 |
| 11 | 6.67 | 0.56 | 11.9 | 4.73 | 0.44 | 0.91 | 1.41 | 15.16 | 7.33 |
| 14 | 15.46 | 0.42 | 36.8 | 5.9 | 0.23 | 1.49 | 2.62 | 67.22 | 10.37 |
| 15 | 6.63 | 0.76 | 8.72 | 2 | 0.65 | 0.94 | 3.31 | 10.2 | 7.05 |
| 18 | 5.68 | 1.08 | 5.2 | 1.98 | 0.37 | 0.88 | 2.82 | 15.08 | 6.34 |
| 20 | 11.5 | 0.38 | 30.3 | 3.48 | 0.41 | 2.91 | 3.30 | 28.05 | 3.95 |
| | 8.8±2.7 | 0.57±0.21 | 17.7±9.54 | 3.2±1.2 | 0.42±0.15 | 1.4±0.7 | 2.8±0.51 | 26.1±20.1 | 7.3±4.02 |
| <i>HER2-negative tumours</i> | | | | | | | | | |
| 5 | 1.72 | 0.54 | 3.18 | 2 | 0.16 | 1.14 | 0.86 | 10.75 | 1.51 |
| 7 | 2.36 | 0.34 | 6.94 | 2.32 | 0.31 | 1.59 | 1.02 | 7.61 | 1.48 |
| 9 | 5.62 | 0.53 | 10.6 | 2.36 | 0.38 | 1.1 | 2.38 | 14.79 | 5.11 |
| 12 | 5.47 | 0.67 | 8.5 | 3.39 | 0.48 | 1.68 | 1.61 | 11.39 | 3.26 |
| 13 | 2.64 | 1.01 | 2.6 | 2.7 | 0.68 | 1.25 | 0.98 | 3.88 | 2.11 |
| 16 | 2.93 | 0.51 | 5.74 | 3.7 | 0.62 | 1.75 | 0.79 | 4.72 | 1.67 |
| 17 | 3.98 | 0.53 | 7.51 | 3.48 | 0.31 | 1.8 | 1.14 | 12.84 | 2.21 |
| 19 | 3.34 | 0.43 | 7.75 | 2.84 | 0.51 | 1.65 | 1.18 | 6.55 | 2.02 |
| | 3.5±1.4 | 0.6±0.2 | 6.6±2.7 | 2.8±0.6 | 0.43±0.2 | 1.5±0.3 | 1.2±0.5 | 9.1±3.9 | 2.4±1.2 |

LDM – latissimus dorsi muscle

Table S3. Accumulation [^{99m}Tc]Tc-ADAPT6 in metastatic axillary lymph nodes, reference organs and mALN-to-reference tissue ratios.

| № | SUV _{max} (mALN) | SUV _{max} (Backg. ALN) | mALN -to- contralat. ratio | SUV _{max} (liver) | SUV _{max} (LDM) | SUV _{max} (spleen) | mALN -to-liver ratio | mALN -to- LDM ratio | mALN - to- spleen ratio |
|---------------------------|----------------------------------|---------------------------------------|----------------------------------|-------------------------------|-----------------------------|--------------------------------|----------------------------|------------------------------|----------------------------------|
| <i>HER2-positive mALN</i> | | | | | | | | | |
| 1 | 14.64 | 0.37 | 39.56 | 3.65 | 0.14 | 2.45 | 4.01 | 104.57 | 5.98 |
| 2 | 4.7 | 0.22 | 21.36 | 1.96 | 0.29 | 0.8 | 2.39 | 16.21 | 5.88 |
| 3 | 4.34 | 0.29 | 14.96 | 2.74 | 0.62 | 1.99 | 1.58 | 7 | 2.18 |
| 4 | 6.52 | 0.11 | 59.27 | 3.18 | 0.44 | 0.55 | 2.05 | 14.82 | 11.85 |
| 6 | 2.88 | 0.21 | 13.7 | 2.88 | 0.48 | 1.69 | 6 | 1.70 | 1.04 |
| 8 | 14.57 | 0.38 | 38.3 | 3.09 | 0.58 | 1.39 | 4.71 | 25.12 | 10.48 |
| 10 | 8.62 | 0.08 | 107.75 | 2.74 | 0.42 | 1.06 | 3.15 | 20.52 | 8.13 |
| 11 | 6.04 | 0.64 | 10.4 | 4.73 | 0.44 | 0.91 | 1.28 | 13.73 | 6.64 |
| 14 | 12.29 | 0.48 | 25.6 | 5.9 | 0.23 | 1.49 | 2.083 | 53.43 | 8.25 |
| 15 | 6.92 | 0.45 | 15.38 | 2 | 0.65 | 0.94 | 3.46 | 10.65 | 7.37 |
| 19 | 3.82 | 0.31 | 12.3 | 1.98 | 0.37 | 0.88 | 1.34 | 7.49 | 2.31 |
| 20 | 16.65 | 0.36 | 46.25 | 3.48 | 0.41 | 2.91 | 4.78 | 40.61 | 5.72 |
| | 8.7±4.6 | 0.3±0.2 | 34.3±27.6 | 3.2±1.2 | 0.4±0.15 | 1.4±0.7 | 2.8±1.3 | 27.3±28 .0 | 6.7±2.9 |
| <i>HER2-negative mALN</i> | | | | | | | | | |
| 5 | 1.31 | 0.12 | 10.9 | 2 | 0.16 | 1.14 | 0.66 | 8.19 | 1.15 |
| 7 | 1.95 | 0.27 | 7.2 | 2.32 | 0.31 | 1.59 | 0.84 | 6.29 | 1.22 |
| 9 | 4.1 | 0.26 | 15.76 | 2.36 | 0.38 | 1.1 | 1.74 | 10.79 | 3.73 |
| 12 | 1.84 | 0.26 | 7.07 | 3.39 | 0.48 | 1.68 | 0.54 | 3.83 | 1.1 |
| 13 | 2.06 | 0.36 | 5.7 | 2.7 | 0.68 | 1.25 | 0.76 | 3.03 | 1.65 |
| 16 | 2.54 | 0.35 | 7.25 | 3.7 | 0.62 | 1.75 | 0.68 | 4.1 | 1.45 |
| 17 | 3.13 | 0.44 | 7.11 | 3.48 | 0.31 | 1.8 | 0.9 | 10.1 | 1.74 |
| 18 | 5.68 | 0.3 | 18.9 | 2.84 | 0.51 | 1.65 | 2.87 | 15.35 | 6.45 |
| | 2.6±0.9 | 0.2±0.1 | 9.2±3.5 | 2.8±0.6 | 0.43±0.2 | 1.5±0.3 | 0.9±0.4 | 6.7±2.9 | 1.8±0.9 |

mALN – metastatic axillary lymph node; LDM – latissimus dorsi muscle

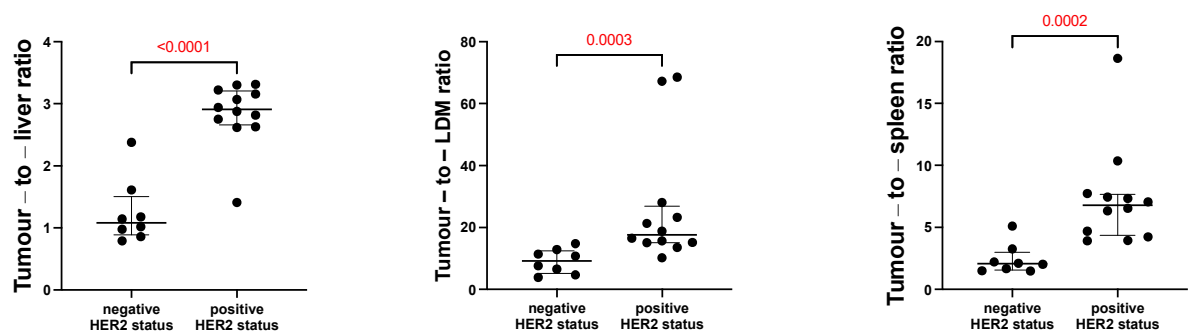


Figure S1. Tumour-to-liver, tumour-to-LDM and tumour-to-spleen ratios in HER2-positive and HER2-negative primary breast tumours. P values were determined using Mann–Whitney test.

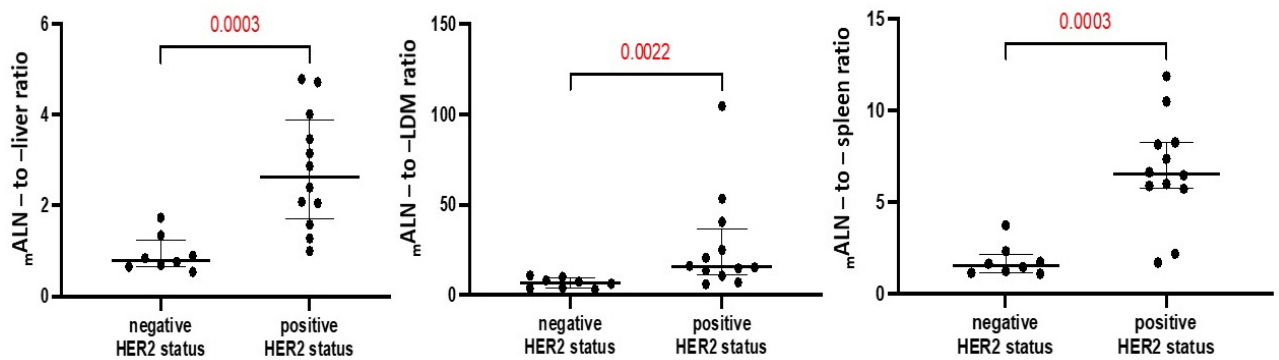


Figure S2. mALN-to-liver, mALN-to-LDM and mALN-to-spleen ratios in HER2-positive and HER2-negative metastatic axillary lymph nodes. P values were determined using Mann–Whitney test.

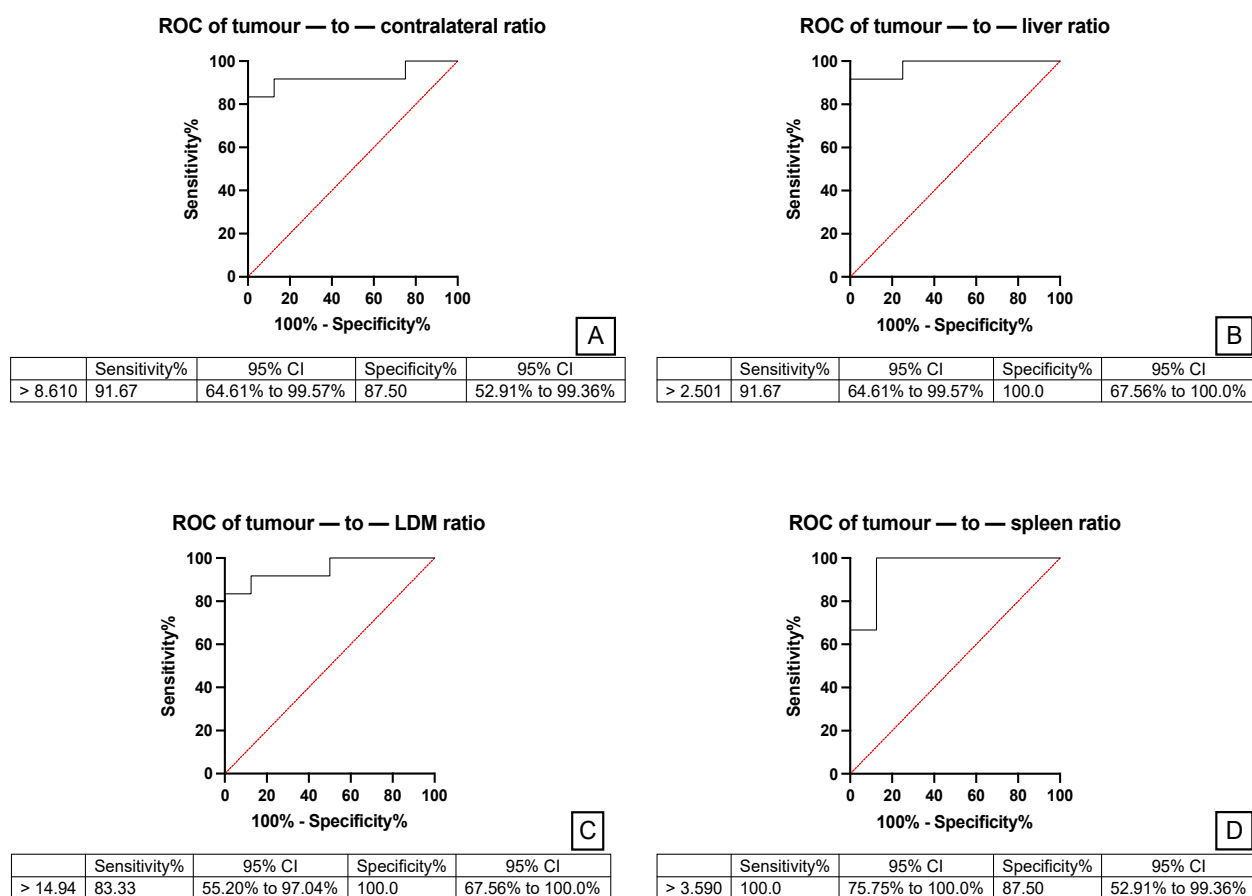


Figure S3. The Receiver operating characteristic (ROC) curve analysis estimating the cut-off values of tumour-to-organ ratios for primary breast cancer. The reference tissues are (A) the contralateral site, (B) the liver, (C) LDM and (D) the spleen.

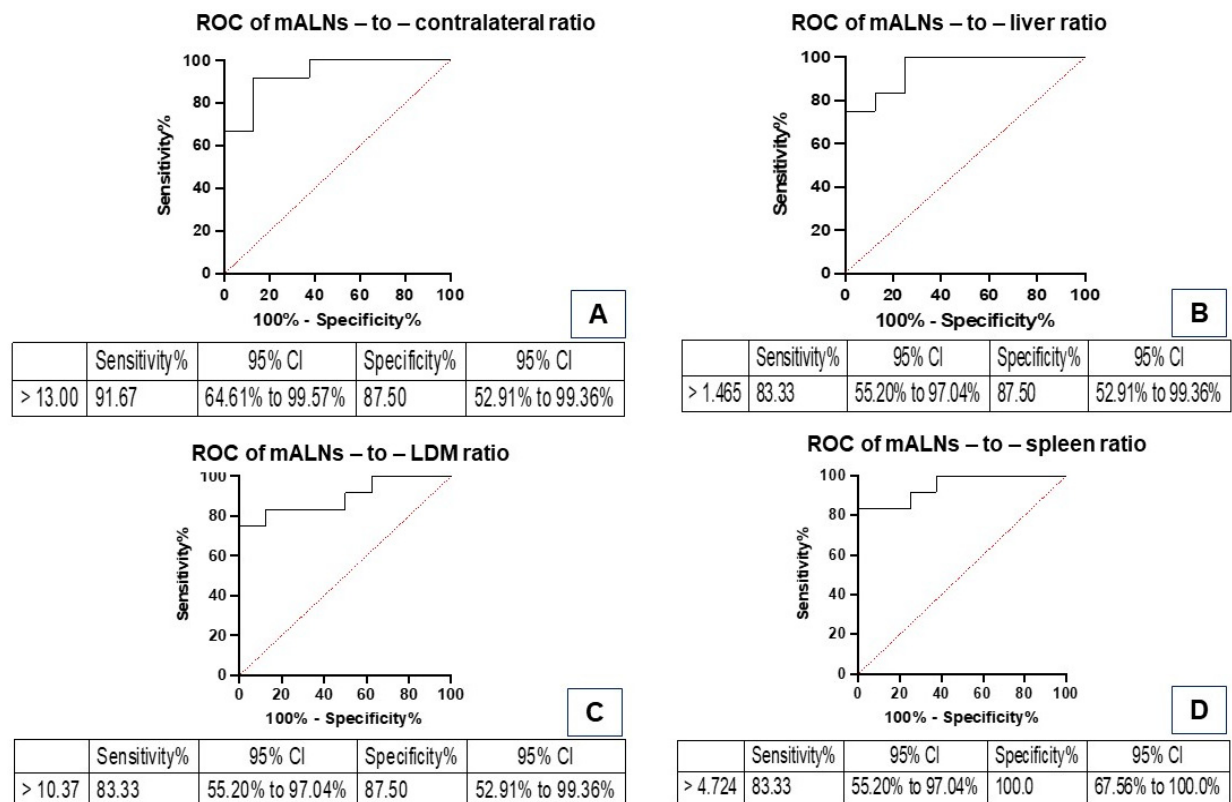


Figure S4. The Receiver operating characteristic (ROC) curve analysis estimating the cut-off of tumour-to-organ ratios for metastatic axillary lymph nodes. The reference tissues are (A) the contralateral site, (B) the liver, (C) LDM and (D) the spleen